Smith.

BULLETIN OF THE

TAYLOR SOCIETY

AN INTERNATIONAL SOCIETY TO PROMOTE THE SCIENCE
AND THE ART OF ADMINISTRATION AND OF MANAGEMENT

December Meeting Papers:

**Mitchell, Wolman, Coonley,
Williams, Perris**

Foreign Contributions

Engineering Societies Building
29 W. Thirty-Ninth St.
New York

FEBRUARY, 1930 VOL. XV, NO. 1

PERIODICAL DIVISION
LIBRARY OF CONGRESS
MAR 11 1930

Objects of the Taylor Society Incorporated

The objects of this Society are, through research, discussion, publication and other appropriate means:

1. To secure—for the common benefit of the community, the worker, the manager and the employer—understanding and intelligent direction of the principles of administration and management which govern organized effort for accomplishing industrial and other social purposes.

2. To secure the gradual elimination of unnecessary effort and of unduly burdensome toil in the accomplishment of the work of the world.

3. To promote the scientific study and teaching of the principles governing organized effort, and of the mechanisms of their adaptations and application under varying and changing conditions.

4. To promote general recognition of the fact that the evaluation and application of these principles and mechanisms are the mutual concern of the community, the worker, the manager and the employer.

5. To inspire in labor, manager and employer a constant adherence to the highest ethical conception of their individual and collective responsibility.

Membership

The membership of the Society comprises Members, Junior Members, Honorary Members, Life Members, Firm Members, Contributing Members and Student Associates. Application for membership should be made on a regular form which may be secured from the Society. New members may be elected directly to the grades marked*.

1. ***Member**: An individual interested in the development of the science and the art of management as engineer, executive, operative, scientist, investigator or teacher. Minimum age 28. Initiation Fee, $15. Annual dues including subscription to the Bulletin, $20.

2. ***Junior Member**: A younger member. A Junior Member may become a Member without payment of additional initiation fee at 28 years of age and must change to Member at 30 years. Initiation Fee, $5. Annual dues including subscription to the Bulletin, $10.

   For any of the above grades a person engaged in educational work, state service, government service or the service of any other non-commercial enterprise of an eleemosynary nature shall pay one-half the initiation fee and one-half the annual dues of the grade to which elected.

3. *Honorary Member*: A member elected by the Board of Directors for exceptionally distinguished service in the advancement of the science and the art of management.

4. ***Life Member**: Any Member who has prepaid all dues by the payment of $500.

5. ***Firm Member**: A firm or organization interested in the advancement of the science and the art of management which desires to make the service of the Society available to members of its organization. A firm member designates two representatives (who may be changed from time to time at the organization's discretion) who have all the rights and privileges of membership except the right to vote and to hold office. Annual dues, including two subscriptions to the Bulletin, $40.

6. ***Contributing Member**: Any individual, firm or organization desiring to promote the work of the Society by an annual contribution of $100 or more. A contributing member has all the privileges of personal or firm membership, as the case may be, including one subscription to the Bulletin for each $20 contributed.

7. ***Student Associate**: A regularly enrolled student of management in any school of engineering, business administration, commerce or arts, of collegiate rank, or a graduate of such institution who has applied for membership not later than one year after graduation, elected upon recommendation of the instructor in charge of management courses. A Student Associate may become a Junior Member, without payment of initiation fee, any time after graduation and must become a Junior Member at the age of 25. Annual dues including subscription to the Bulletin, $3.

All dues are payable in advance, either annually or in semi-annual instalments. The fiscal year is November 1 to October 31. Members elected other than at the beginning of the fiscal year are charged pro rata (quarterly) for the first year.

MAR -1 1930

©CIB 63035

BULLETIN OF THE
TAYLOR SOCIETY
AN INTERNATIONAL SOCIETY TO PROMOTE THE SCIENCE AND THE ART OF ADMINISTRATION AND OF MANAGEMENT
Published by the Taylor Society Incorporated at
Engineering Societies Building
29 West Thirty-Ninth St., New York
Cable address: Taysoc

The BULLETIN OF THE TAYLOR SOCIETY is included in the indexing of the Industrial Arts Index which is obtainable at Public Libraries.

The reprint of extracts up to 50 per cent of the whole of any article herein is authorized, provided the source is mentioned. In return the Society appreciates complimentary copies of the publications containing such reprints. Permission to reprint more than 50 per cent must be arranged through the office of the Society.

Copyrighted 1930, by the Taylor Society Incorporated.

Published every other month. Per year to Members $2.50; to others $3.00. This issue $1.00.

Entered as second-class matter, Dec. 17, 1921, at the Post Office at New York, N. Y. under the Act of March 3, 1879.

Vol. XV FEBRUARY, 1930 No. 1

Contents

Comment 1

Industrial Equilibrium in a Business Economy

Are There Practical Steps Toward an Industrial Equilibrium? 2
By Wesley C. Mitchell
The Bearing of Industrial Equilibrium on Regularity of Operations and Employment 6
By Leo Wolman
Discussion by Stuart Chase, James T. Madden, Leonard Kuvin, Henry P. Kendall, C. B. Hammond, Hudson B. Hastings, Norman Lombard

Control and Size in Management

Are There Controllable and Uncontrollable Factors in Management? 18
By Howard Coonley
Is There an Optimum Size of Organization? 22
By John H. Williams
Discussion by Richard A. Feiss, F. A. Silcox, Walter Rautenstrauch, John M. Carmody, William H. Leffingwell, L. Herbert Ballou, Harry Arthur Hopf, Henry P. Dutton, Gorton James, Henry P. Kendall, H. S. Person
Distribution Costs 32
By Norris M. Perris
The World Engineering Congress in Tokyo 39
By Lillian M. Gilbreth and Yoiti Ueno
Wilfred Lewis 45
By King Hathaway
European Appraisals of "Recent Economic Changes" 46
By L. F. Urwick, Edmond Landauer and Oliver Sheldon
A French Labor Leader Interprets Scientific Management 53
By Mary van Kleeck
Annual Business Meeting 54
News of the Sections and Notes . . 54
Reviews 55

Comment

WE BELIEVE our readers will keep this issue of the Bulletin within easy reach, for it is packed with material which will inspire deliberate and thoughtful reading. In fact, there is so much that we shall refrain from comment; should we once begin we should not know how to stop.

INSTEAD, we shall call our readers' attention to a book, translated and published under the auspices of the Taylor Society, which will be made available by Harper & Brothers about the time this Bulletin appears. The American title is "Robots or Men? a French Worker's Experience in American Industry," by H. Dubreuil. It is a translation of Dubreuil's "Standards: le travail américain vu par un ouvrier français," which was published in Paris in the Spring of 1929 and has become a non-fiction best seller in that country, and the object of much controversial discussion.

THE AUTHOR is a French mechanic and officer of a labor organization. Having become distrustful of reports by academic and executive investigators concerning the status of labor in American industry—how scientific management and mechanization are making workers slaves of the machine—he decided to do some investigating for himself. Like a journeyman of earlier times, he came over as an immigrant and worked for fifteen months in American plants. Fortune favored him in securing a perspective of American industry, for he worked under every type of management. The result is a fascinating story of exploration and discovery.

WHAT IS more significant, this book is an important research document. What *is* the *worker's* reaction to American mechanization and methods of management? We have never had a report of experience and reactions from a worker or from one who succeeded in putting himself in the place of a worker. Our appraisals of "the iron man" have been from those who are essentially artists, who have tried in vain to project themselves into the position of workers and realize their feelings and reactions. Now for the first time we have a report by a worker. And on the whole it is complimentary to American conditions.

Industrial Equilibrium in a Business Economy

Are There Practicable Steps Toward an Industrial Equilibrium?[1]

By WESLEY C. MITCHELL
Director, National Bureau of Economic Research
and
Professor of Economics, Columbia University, New York

I

DISCUSSION of concepts is not a favorite pastime of Americans. We have a habit of forcing words to serve our practical ends, and we want them to be quick about it. In cases of doubt, we rely upon the context to supply the appropriate meaning. I share this prevailing distaste for meticulous definitions. There has been a deal of unprofitable wrangling about the meaning of economic "concepts." Not much knowledge can be spun from verbal discussions. Realistic study of actual processes is a far more promising, as well as a far more agreeable, activity.

Yet I cannot discuss the question, "Are there practicable steps toward an industrial equilibrium?" without inquiring what "industrial equilibrium" means. If you find my delving into the mysteries of that resounding phrase unprofitable, please ask your program committee why they left a practical question to the tender mercies of a theorist.

Since the Taylor Society is centering the present series of meetings upon "Recent Economic Changes," it is natural to turn to that book for an interpretation of the term. I find no reference to "industrial equilibrium," "industrial balance" or to "equilibrium" in the index to the fact-finding portion of this work, prepared by the National Bureau of Economic Research.[2] The only references to "balance" concern the "balance of trade" and the "balance of international payments." But the report of the committee which sponsored the study, headed by President Hoover and composed of eminent men of affairs like Mr. Lawrence, yields better results. This committee summed up their impression of the whole investigation as follows:

" . . . the outstanding fact which is illuminated by the survey is that we cannot maintain our economic advantage, or hope fully to realize on our economic future, unless we consciously accept the principle of equilibrium and apply it skilfully in every economic relation."

If you inquire what "the principle of equilibrium" is, you get help from other passages. Thus the committee says:

"To maintain the dynamic equilibrium of recent years is, indeed, a problem of leadership which more and more demands deliberate public attention and control. . . .

"Our complex and intricate economic machine can produce, but to keep it producing continuously it must be maintained in balance. During the past few years equilibrium has been fairly well maintained. We have not wasted the hours of labor by strikes or lockouts. Until recently we have not diverted savings from productive business to speculation. There has been balance between the economic forces—not perfect balance, but a degree of balance which has enabled the intricate machine to produce and to serve our people.

"As long as the appetite for goods and services is practically insatiable, as it appears to be, and as long as productivity can be consistently increased, it would seem that we can go on with increasing activity. But we can do this only if we develop a technique of balance."

This language seems clear. What we attained in large measure after the crisis of 1920-21, what we should seek to perfect, is a balance among economic forces—not a static, but a "dynamic equilibrium," for we wish to increase production and consumption. Yet in this sophisticated company I venture to raise questions which the President's committee forebore to discuss. Equilibrium and balance are metaphors when applied to economic activities. What meaning do they carry in this application? What are the "economic forces" which the committee would keep in balance? Strictly speaking, do we wish to establish equilibrium among these forces? Is business equilibrium compatible with industrial progress? With social welfare?

---

[1] Paper presented before a meeting of the Taylor Society, New York, December 4, 1929.

[2] The index is not infallible, however. There are brief references to economic balance in the last section of the last chapter.

II

In seeking answers to these questions, let me turn for a moment from the fresh realism of the sponsoring committee's report to the abstractions of economic theory. The concept of equilibrium has played a prominent role in our technical speculations. The most comprehensive, and yet the most compact, presentation of the idea is provided by the mathematical writers who have developed the methods devised by Leon Walras. One of the simplest recent expositions has been given by Gustav Cassel, the eminent Swedish economist. I can indicate what equilibrium means in Cassel's *Theory of Social Economy,* without going into details.

Take a market in which any number of goods are bought and sold. Call this number *n*. Then one can set up seven sets of simultaneous equations which will show how the prices of all these goods are determined—both consumers' goods and producers' goods, including among the latter the means of production which people sell to get money incomes. The first set of equations states that the demand for each good is a function of its own price and the price of every other good in the market. There are *n* of these demand equations, one for each of the *n* goods. A second set of equations, also *n* in number, states similarly that the supply of each good is a function of its own price and of the prices of all the other commodities. A third set of equations states that the unit price of each good equals the aggregate of the unit prices of the various means of production required to provide it, multiplied severally by the number of units of materials, labor, etc., used per unit of the product. I need not elaborate further. The essential points are (1) that the price of every one of the *n* goods is represented as influencing and being influenced by the price of every other good in the market, (2) that these prices settle at points which equate supply with demand, selling prices with costs of production, incomes earned with incomes spent (for saving is a form of spending). Of course, equating quantities means establishing equilibrium between them.

Cassel works out these results on the basis of certain conditions contrary to fact. For example, in his abstract world there is no ambiguity about costs of production; consumers know their own minds; there is free competition; the whole economy is stationary, or progresses at a rate which does not change; reactions of demand and supply upon price, of price upon demand and supply, take place immediately, or complete themselves within whatever period the discussion covers. The theory does not profess to describe actual economic processes. Yet it is believed to picture fundamental tendencies of the greatest significance for understanding actual processes. The economic theorist holds that, in fact, every element in modern business life influences and is influenced by every other element. Demand, supply, costs of production, incomes received and incomes spent mutually determine one another. Through the infinitely complicated business dealings going on at any time runs a gravitational pull toward equilibrium. Every departure from equilibrium which occurs—and there are countless "disturbing factors" in practical life—starts processes which tend to establish a new equilibrium. This gravitational pull toward equilibrium is nothing which anyone need plan for, any more than we need plan the orbits of the solar system. Equilibrium constantly tends to establish itself afresh whenever departures from it occur.

III

Besides the static theory of equilibrium, with its argumentative application to actual affairs, we have a more realistic type of theory concerned with the changes which are continually occurring in economic activities. Let me outline this view also, again with a high-handed neglect of details and qualifications.

The work of producing raw materials, fabricating them and distributing products, together with the incidental processes of transportation and storage, is carried on more and more by business enterprises. These enterprises must make profits to survive. An enterprise makes profits by buying and selling goods of various sorts at money prices. For their markets these enterprises depend directly upon other business enterprises, or directly upon individual consumers. In the last resort even the business demand for things like machines and cement depends upon the consumers' demand for things like food, clothing and housing. Consumers, in turn, get the incomes which enable them to buy direct from business enterprises for the most part, as wages, profits, dividends, interest or rents. Indirectly, even the professional man who works for individuals or governments, like the physician and the policeman, is dependent upon incomes derived from business.

Here we have another picture of economic interdependence quite as emphatic in its emphasis upon balanced relationships as the mathematical theory of static equilibrium. But this picture does not represent balances as attained. On the contrary, it utilizes the temporary excess of one factor over another to explain how changes come about—how commodity prices rise and fall, for example, how physical production waxes and wanes, how population shifts to and fro between rural and urban areas, and so on. Instead of picturing the changes as tending to establish an equilibrium, it pictures them as giving rise to new conditions characterized by stresses which lead to further changes, and so on indefinitely. Economic life is conceived as an evolving process of cumulative changes, more like biological evolution than like mechanical equilibrium. To facilitate investigation, the changes in process all the time are classified broadly as random, seasonal, cyclical and secular movements. Efforts are made to find how each of these types of change comes to pass and how the several types are related to each other. While students of these movements commonly deny that economic activities ever reach a state of equilibrium, they make continual use of the idea of equilibrium, in the sense that they explain the direction of the changes taking place at a given time by the character of the disequilibrium which preceded or is anticipated. This is a permissible interpretation of their general procedure.

IV

Now turn back to the sponsoring committee's report. We "can go on with increasing activity," says the committee, "only if we develop a technique of balance." The mathematical theory of equilibrium says that in an economy where free interchange of goods can take place, equilibrium tends to establish itself. The realistic students of economic fluctuations say that some condition of disequilibrium always prevails and is always bringing about changes, which result in a somewhat different condition of disequilibrium and a new set of changes, world without end.

Are these three statements incompatible with each other? Not in the least, I think, when each is reasonably interpreted.

In a sense, free exchange of goods is a technique of balance. It might, therefore, be said that we already have the technique which the committee says we should develop. But no pure theorist would claim that in real life commercial demand and supply are based on adequate knowledge of such factors as consumers' tastes, consumers' incomes or costs of production. Taking the committee's viewpoint as citizens interested in social welfare, the pure theorist would grant that there is plenty of room for improvement in our technique of balance.

On the other hand, I doubt whether the sponsoring committee would abolish all disturbances of economic equilibrium if they could do so. For that might check progress per capita production and consumption. What the committee wish is, presumably, to make an improved technique of balance serve industrial progress. They realize that almost every improvement in economic practice disturbs some of the rough-and-ready balances on which business men base their plans, and puts someone under pressure. Most of us believe that other people need such outside pressure to give most to and get most out of life. We attribute a great part of the mechanical progress of the last hundred years to the pressure which those who early adopted superior methods applied to their slower-moving competitors. The desideratum seems to be a technique of balance which will permit of cumulative changes, each of which disturbs existing arrangements enough to secure the prompt adoption of improvements and keep everybody on his mettle, but a technique which will prevent these salutary irritants from developing into cancers. In other words, the aim is to reduce random, seasonal and cyclical fluctuations in economic activity, so far as that can be done without checking the rise of secular trends.

Needless to say, it will take a most discriminating technique of balance to accomplish this ideal. Yet the fact-finding report of the National Bureau on "Recent Economic Changes" indicates that gratifying progress in that direction has been made of late. The half-dozen years preceding 1929 combined moderation of cyclical fluctuations with acceleration in the rate at which per capita income grew. Doubtless circumstances which no man planned contributed to this outcome; but part of the result was due to human contrivance. Nor does any reason appear why, by the continued exercise of their inventive powers, men may not better the accomplishments that are recorded from 1923-28.

V

There remains a subtle problem of which we are all dimly aware, a problem which critics of modern economic life often emphasize, but a problem which we seldom discuss constructively. This is the danger that we may upset our working economic equilibrium by producing too many goods. The form of economic organization which we have developed, in which the unit is a business enterprise seeking to make profits, often makes it necessary to limit industrial output.

I may take an illustration from Paul H. Nystrom's new book on the *Economic Principles of Consumption.* On the basis of census figures for the active year 1923, Nystrom concludes:

". . . in the manufacturing industries it seems probable that there is at least 25 per cent general overcapacity for production for which there is no consumer demand even during prosperous years. It is commonly believed that the percentages of over capacity given in the Census of Manufactures are very conservative. . . . It may safely be assumed that if there were general, effective demand for manufactured goods at prices that would produce profits for the manufacturers, actual production as represented even in the 1923 figures might easily be doubled almost immediately.

"The productive capacity of farms (Nystrom continues) is also much greater than the present consumer demand. For several years the acreage actually under the plow and producing crops has been declining as has the farm population. If there were a profitable demand, it is certain that the production of agricultural products could be greatly increased, but not immediately, for it takes time to establish higher scales of production in grains, meat, animals and other farm products."[3]

All of us are more or less familiar with these uncomfortable facts. They have a spice of paradox. Supposedly our wants are far from satisfied. Supposedly we dislike to labor and to wait. We submit to these sacrifices only because we want the goods which labor and capital produce. Yet we have saved and invested in productive equipment for mines, farms and factories more capital than we have use for in a busy year. Also there are more of us eager to make the sacrifice of labor than can get steady jobs. Our captains of industry, against their own inclinations, are forced to hold a large fraction of our existing capital idle and to refuse work to a smaller, but still appreciable fraction of our labor force. If they acted otherwise, they would lose money for their enterprises and bring on a period of general depression in which the level of employment for labor and capital would fall lower still.

Summing up this situation in one of his whiplash phrases, Thorstein Veblen said that the chief service to industry rendered by the modern business executive is to practice "capitalistic sabotage."

In seeking to develop the "technique of balance" for which the sponsoring committee calls, we should face honestly this ambiguous relation of business profits to economic welfare. Presumably a rough industrial equilibrium can be worked out in the United States on a relatively high or on a relatively low level of per capita real income. Every enterprise and every industry which seeks to increase its profits by restricting production makes it more difficult to achieve a balance on the high real income level. A leading point in our technique should be to level up industrial output, not to level down.

That call is hard to answer. Yet there is evidence of achievement. Last year Horace Taylor, one of my colleagues at Columbia, published a book called *Making Goods and Making Money* in which he reviewed American practice in manufacturing goods over several decades. He concluded that:[4]

" . . . as time goes on it is becoming increasingly necessary, in manufacturing industries, to make goods in order to make money." In the briefer period but wider field covered by the report on "Recent Economic Changes" there are similar indications. Broadly speaking, the industries which flourished most in 1922-28 seem to have been industries with a large output, low-price policy, made possible by high technical efficiency. Of course there were also depressed industries which suffered from overproduction. The line of least resistance for them was to restrict output—if they could—and raise prices. Perhaps the rest of us need not be sorry that it is hard to organize such an industry for restriction. That condition may force the depressed branch to take the constructive but arduous line of inventing an industrial way out of their business troubles.

---

[3] Nystrom, Paul H., *Economic Principles of Consumption,* New York, The Ronald Press Company, 1929, pp. 18, 19.

[4] Taylor, Horace, *Making Goods and Making Money,* New York, The Macmillan Company, 1928, p. 266.

The technique of balance which we need must deal with business forces, because they control industry conducted for profit; but in dealing with business forces the technique of balance should aim at an ever larger per capita income reckoned in goods—not in dollars. It should get its balances by leveling up rather than down.

Having taken so much time in discussing what sort of industrial equilibrium is worth striving for, I have no time left to answer the question, whether there are practicable steps toward it. But that does not matter. All I could say is "Yes, there are such steps." I know so much because "Recent Economic Changes" tells about various measures which have been tried of late by government and by private concerns to make the business engine run more evenly. Also I recognize that a further step of great technical interest is being tried at this moment on a national scale. While a business cycle is passing over from the phase of expansion to the phase of contraction, the President of the United States is organizing the economic forces of the country to check the threatened decline at the start, if possible. A more significant experiment in the technique of balance could not be devised than the one which is being performed before our eyes.

But whatever measure of success may attend President Hoover's effort, further steps toward industrial equilibrium must be taken in the future. What they will be is not for me to say. No man without experience in industrial management is competent to form opinions upon the practicability of alleged improvements in organization or procedure. You of the Taylor Society, who combine practical experience with the analytic habit of mind, are the proper people to answer the question which the program committee put to me. I thank the committee cordially for the compliment implied, and pass the question back to you.

The Bearing of Industrial Equilibrium on Regularity of Operations and of Employment[5]

By LEO WOLMAN

Member of Faculty, New School for Social Research
and
In Charge of Research Department, Amalgamated Clothing Workers of America, New York

IF THERE is anything to the notion of balance and equilibrium, then the problem of securing industrial stability and regular employment consists in the early discovery of excesses in the industrial system and in the application of measures of control. In principle such a procedure may appear simple; in practice it is surrounded with unusual difficulties—difficulties of fact and of analysis.

It is not so long ago since disturbances in the economic system were regarded as self-corrective. The interesting question now is whether we have passed much beyond that stage; and the answer to the question seems to me to lie in our capacity to analyze the experience of at least the recent past. In spite of the fact that we now know more about business and its fluctuations than at any time in the history of modern industry, it may still be a useful approach to the problems of forecast and regularization to elicit and describe factors that appear, in the past decade, to have been crucial and determining in our industrial situation.

---

[5] Paper presented before a meeting of the Taylor Society, New York, December 4, 1929.

For this purpose, further, it may be desirable to consider separately the phase of decline and revival between 1920 and 1922, and the phase of sustained business activity in the period thereafter. While many factors no doubt contributed to the swift and unexpected turn of American business after the deep depression of 1920 and 1921, the single and most effective force was, in my judgment, the speed and completeness of the business and industrial liquidation of those years. Even allowing for a great variety of essential differences in the situation, this American experience stands in sharp contrast to the course of events in England during the same period. In place of a hesitant and prolonged adjustment of costs to a new condition, such as has characterized the history of the past ten years of English industry, the American adjustment was drastic and decisive. What happened here was probably not the result of deliberate policy, but was due to the prevailing temper of the country manifested in an unusual mobility of both capital and labor.

This fact of mobility or of elasticity which seems to me to be central in accounting for both the recovery of business and for the maintenance of high levels, once they have been achieved, has persisted in the subsequent post-war years. If anything its force has been enhanced. The rising general level of education in the country, the progressive mechanization of industry, the experimental attitude of the industrial engineers and of the managers of industry, the cumulative application of invention, and the preoccupation of industry with the improvement of plant and equipment, have been the factors that have combined to accelerate the pace of our industry and to perpetuate the habit of frequent and universal change.

Associated with this pervasive, psychological attribute of our contemporary business situation are features that may well turn out to be more fundamental. They may have accounted for the recessions of 1924 and 1927 and may be the crucial factors in shaping the immediate uncertain future which we now face.

Of these the most significant appear to me to be the state of the efficiency of industry, the direction of the price level, the credit condition of the country, and the probabilities of further growth in the size of the market. I can, of course, do no more than lay these items before you and attempt to assess their importance.

Changes in the efficiency of industry reflect themselves in changes in cost. It may in general be said that a condition of falling costs in industry, that are the product of improved methods of management and invention and are not the results of reduced wages, indicate a healthy state of industry. Since 1919 such a condition has characterized the whole of American industry. But, as was pointed out in "Recent Economic Changes," the striking changes in productivity and, hence, in cost took place largely in the so-called new industries—the automobile and collateral industries, the electrical and chemical industries. We unfortunately know too little about the natural history of invention and of technological changes. Does the conception and application of invention have its ebb and flow like business itself and have we, in these new industries, reached the stage of retardation in which we can, for the time being at least, look forward to no further progressive reduction in costs? On this matter the essential evidence is lacking. As early as 1927, there were some signs of a slackening in the rate of increase of per capita output in the automobile and related industries. If these signs forecast a period of rising prices in these industries then their progress during the next few years may be different from what we should otherwise expect.

Many observers of American business have regarded the high levels of output in the automobile and construction industries as the foundation of our prosperity of these last eight years. Competent inquiries have rejected the notion that the surprising expenditures for both private and public construction did no more than make up the deficiencies in building of the war years. For lack of a better explanation, the rising tide of building has been attributed to the rising standards of living of the American consumers. In this field of industrial activity it seems impossible to explain what has happened in terms of reduced costs, although progress in management and advances in the efficiency of labor may have kept costs at a lower level than we realize. On the face of things, however, the building and automobile industries appear to have achieved expansion by different roads. How, then, account for this variety of experience, unless it be that our data of measurement are incomparable and defective? Granting finally that both the construction and automobile industries have reached the end of their rope and can make no further progress in technology or management during the next several years, we must then depend for an accelerated pace of industry upon the performance of some unknown new industry or upon technical revolutions in the old, established ones.

Cost, in itself, is not the issue. In a profit economy, such as ours, much hangs upon the relation between levels of cost and of prices. Levels of falling or stationary prices need cause no alarm while industrial costs are being reduced or, at any rate, stabilized; but if prices fall or lag in the face of an upward tendency in costs, or if the steady movement of falling costs is stopped, then a downward wholesale price level may indeed produce those consequences in shrinking profits that are often associated with the existence of industrial depression. Under such circumstances, the only way out is finally a rising price level and a business situation quite unlike that which prevailed in the past decade.

The state of a nation's credit, and its bearing on the past and future course of business, is not easy to summarize and to assess. There is first, of course, the question of the effects of new types of credit. The well-known uses of variants of consumers' credit in the development of such industries as the automobile and the radio may or may not constitute a species of slow, but effective, inflation. On this matter, we must wait for a further gathering of the facts and for their satisfactory interpretation. A like gap in our knowledge and understanding exists with regard to the financing of building construction during the boom years 1925 to 1928 when responsible factors in the industry detected the signs of inflationary practices. That this condition corrected itself during the past year by restrictions on the issue of mortgages and the placing of building loans does not make the history of the episode any the less interesting and instructing. Such specific observations on credit are tangible and, to some extent, measurable. But whether it is possible to come to similar generalizations regarding our credit structure as a whole, or to subject it to some like process of analysis, is very doubtful indeed. Here again there are obvious factors, like the recent easing of money rates and the stiffening of bond prices, that suggest the existence of a fundamentally sound credit position. But how far this conclusion is tenable and what forces may already be at work to bring about a radical change for the worse in our credit position (significant items for the forecast of the future course of American business) are matters on which it now appears very hard to obtain light.

In spite of the high costs of American salesmanship and advertising, it would seem reasonably certain that the increase in total production, here and elsewhere, is a direct function of the growth of the market. Mass production, the manufacture of standardized products, depends for its effective use on large sales. To the extent to which an industry makes use of these devices of distribution and resorts in consequence to methods of mass and large-scale production, it is able to reduce costs, lower prices, increase its business and to employ an increasing labor force. It makes its contribution in this manner to the cumulative process of business and industrial expansion. Sooner or later the accelerated pace of such a group of related industries slackens and the existing economy must look elsewhere for a new stimulus. The creation of this type of incentive to business is the purpose of the conferences now being held in Washington and it may very well happen, within the next months, that the spur to business will come either out of the deliberations in Washington or from the discovery by a single industry of a new product or a variant of an old one that possesses the qualities which have just been described.

If this brief paper has appeared to deal with abstractions, it is because I have wished to indicate that area for the exercise of economic policy which, in a measure, lies beyond the control of the individual business man. It is an area that should increasingly enlist the interest of the leaders of industry because it is here that the next steps in the social control of business are most likely to be taken. It is where the fixing of economic policy seems to be everybody's concern that our conceptions of the problem remain vague and uncertain. With the further accumulation of data, bearing on the kind of questions that have been here discussed, and with further refinements in the instruments of economic analysis, we may be more sanguine over the future of that control of industry which rests upon our understanding of the processes and sequences of competitive business.

Discussion

Stuart Chase.[*] The problem that the Taylor Society is discussing this evening is, in my mind, the most important problem that the modern world is facing. Perhaps it might be journalistically summarized in the statement that we are challenged to control a billion horses, all more or less wild. Since James Watt took his famous walk on Glasgow Green, and smiled because the answer to the problem of a vacuum in a steam chamber had come to him, we have loosed upon the world at least a billion horse power. The problem is whether they are going to control us or we them. I have been devoting my time lately to trying to find out where they are helping and where they are harming. At the end of my analysis I come solidly against the question of whether we have the intelligence collectively to control this enormous flood of power that we have loosed upon the world. Like Mr. Mitchell, I am forced to throw the problem back to you, the engineers. It seems to me that a mechanistic society should be controlled primarily by those of an engineering turn of mind. They presented this society to us and it is up to them to see that it does not destroy us.

The idea of co-ordinated industrial control is conceivable under a dictatorship. In such countries as Russia and Italy it is possible to think of central economic staffs which possibly can co-ordinate industry, but in the United States the problem is immensely complicated. Here free competition, somewhat diluted by mergers, to be sure, is the rule. But it is profoundly interesting, it seems to me, to look across the sea to Russia to see what they are doing there. There may or may not be lessons for us; I suspect that there are some.

I was in Moscow two years ago, and while my fellow travelers were discoursing with politicians, statesmen and educators, I headed straight for the Gosplan. It was a great barracks of a building, housing about five hundred engineers, statisticians and economists at that time. The clang of adding machines and calculators was abroad in the corridors. As a C. P. A. it was music to my ears and there I stayed, talking directly with those who talked English and through an interpreter with those who talked only Russian. I was trying to find out what these gentlemen were up to. They were up against an enormous problem and had gone straight to the heart of it; that is, they had realized that the way to co-ordinate industry is to allocate capital. Capital investment is the controlling factor; where would they place their surplus? Should it go into oil wells, coal mines, shoe factories, textile mills, highways, schools? That was their problem, a great jigsaw puzzle of working out what factors in their economic scheme should have the limited supply of rubles which were available. In Russia one says "rubles" but what is meant, of course, are labor and raw materials and technical skill. These are the things that are building Russian industry.

The first objective of the Gosplan was to bring Russian industry by the year 1927 up to the pre-war level of production. They had nearly accomplished their objective when I was there. When I got back the figures that came in showed that the goal had been accomplished. Whereupon these courageous gentlemen immediately began on a plan for the next five years. They said, "We will double the production of industry during the next five years."

Horace Liveright has recently published an English account of the Gosplan so that any who wish may study it. Here are some of the aims which it contemplates. The first is a total capital investment during the five years from 1928 to 1933 of $31,000,000,000 or sixty-two billion rubles. The accent is very strongly on producers' goods, the chief being electrical power and steel. They plan to release just enough consumers' goods to keep the population from complaining too loudly, just enough to feed and clothe and keep them warm. They are planning first to build up their underlying industrial structure so that a flow of consumers' goods may come in due time. You will agree with me that this is a sensible program, but at the same time a rather heroic one, because the planners will be continually under pressure by the population to release more and more consumers' goods.

In 1933 there will be 33 per cent more workers in large-scale industry, an increase in output per worker of 110 per cent, a 70 per cent increase in real wages and a 35 per cent decline in unit costs. The last figure is a crucial one. Can they bring unit costs down? It is there that they will need their best engineering and technical brains.

---

[*] Labor Bureau, New York.

In the year 1933 they hope to have six million families on mechanized farms, operating 170,000 tractors. (At the present time we have about 600,000 tractors in the United States.) On these mechanized farms, 20 per cent of the total crop will be raised and 33 per cent of the marketable crop. From them they expect to get their wheat for export. It is interesting to note in passing that Mr. Campbell, our king of mechanical agriculture, went to Russia to lay out the first unit, a hundred thousand acre farm, 100 per cent mechanized. It is the biggest mechanized farm in the world. Mr. Campbell's Montana unit is 80,000 acres.

In the year 1933 the 160 million square meters of industrial housing space will move up to 213 million square meters. (Before they start to build an industrial plant they build workers' houses.)

The engineers required to carry out the plan have been carefully calculated. There are 20,000 engineers now at work; in 1933 they will need 42,000 engineers. They hope to be able to supply twenty thousand of these from their own universities and technical institutions but inevitable retirements and deaths will necessitate securing at least five thousand of them outside the country. They pay their foreign engineers very well—a chance for any of you who may perchance get squeezed in a merger! These foreign engineers are expected at the same time to give vocational instruction to 1,300,000 skilled workers in special technical training schools.

Physical production is to move upward from an index of 100 in 1928 to 236 in 1933, a gain of about 20 per cent a year. The actual figures that have come through show a gain of 24.3 per cent for the fiscal year ending October 1, 1929. The plan called for a 21 per cent increase, so that in the practical test the first year is up to schedule. I believe the whole five year plan will keep pretty close to schedule—failing a terrible crop famine, or foreign invasion or other acts of God.

In the year 1933 the seven-hour working day will be universal and industry will be working seven days a week for 360 days a year. There will be only five holidays when machines will stop. No engineer needs to be told of the saving in overhead expense that such continuous production will entail. Workers will be staggered by shift; Sunday is to be abolished. The men will work five or five and a half days, and the industrial flow will be kept continuous.

Some of their individual projects are enormous. The Dneiperstroy power plant, which our own Colonel Cooper is directing, is to be the largest hydro-electric power station in the world. I saw the beginnings of it when I was there. The whole rich Donetz Basin is being turned into one combined coal, coke, ore and chemical industry, operated as a unit. They are operating their oil fields as a unit without offset derricks and all the lamentable wastes of private exploitation. They respect the unity of the underlying pool. The Volga-Don canal will be far advanced; the Turkistan-Siberian Railway should be completed by 1933. Project after project is of a size to make even the country of mass production take off its hat. And we are helping them do it. Stuart, James and Cooke are helping to develop the Donetz Coal Basin; the General Electric has a contract of $16,000,000 for equipment. DuPont is helping, and the Ford Motor Company is building a large automobile plant. Lockwood, Green and Company, the Newport News Shipbuilding Company, the Hercules Motor Company—some of our best American plants—have had their imaginations fired by the Russian experiment. It is a basic attempt to deal with the problem of functional control.

Lest we lose our perspective we must remember that the per capita income of Russia in 1928, as far as it could be calculated, was about eighty-three dollars. At the end of the five year program it will have moved up to only about $130, whereas our per capita income in the United States is now about $750. The Russians have a long way to go, but if they keep doubling their industrial production every five years, some day they may catch up. In that day we can make a real comparison between the two economic systems.

The application of a Gosplan to the United States would, as I say, be difficult, but it seems to me that Mr. Hoover is inaugurating an approach to some sort of an economic general staff, a highly modified Gosplan, if you please. Perhaps I am just foolhardy enough to rush in where Mitchells fear to tread, but it seems to me feasible. I do not see why we cannot set up, even in this land of free competition and mergers, a sort of advisory economic general staff for the nation as a whole, together with a series of regional staffs. I think I would have these laid out by Mr. J. Russell Smith, who knows more about natural economic areas than anyone with whom I have ever come in contact. Each of these areas having common economic problems could set up a purely advisory general staff which would serve as a central co-ordinating statistical body to gather the facts in respect to that particular region.

In regard to the plan for the region we could not of course be as careful and meticulous as the Russians but we could look toward some sort of effective control for the region. It should look toward the conservation of natural resources, particularly oil, lumber, coal, soils and fisheries. The general staff should also know the region so well that it could advise in respect to the conservation of capital so that no particular region is grossly overbuilt as to productive plant. We have today in the United States equipment to produce 800,000,000 pairs of shoes a year, whereas we can possibly wear out only 300,000,000 pairs. This general staff should pay particular attention to the question of technological unemployment. Machines seem to be displacing men faster than jobs can be found for them. It should advise in respect to the control of credit, so that the recent attempt to give the country back to the Indians on Wall Street will not be repeated. It should also serve as a propaganda body, hammering away at the doctrine of the economy of high wages. Business men are beginning to accept that doctrine quite widely, but A does not dare to increase his wages because he is afraid B, C and D will not do it also. He knows that if they do it will be profitable for him, but who shall start the ball rolling? The central planning board might get A, B and C together and urge them to increase wages simultaneously.

The whole question of regional planning in the sense of beautification is also important in America. We need great public works, highways, buildings, parks and recreation centers where we may balance the stresses and strains of our mechanized living. And I think it would be very useful to develop a strong competitive sense between the various regions in these matters. If the New England region took the lead in accident prevention, or parks, or what not, the others would be stimulated to meet and surpass the performance.

The staff should also advise in respect to industrial decentralization. The flood of electrical power over the country, with its high power transmission lines, is beginning to move industry out from urban centers to rural districts. Locations must be carefully planned, however, for effective operation, because electric power cannot be turned into heat, unfortunately, and modern industries are ravenous users of heat.

They should act as a clearing house of information on those extraordinary advances in management, of which Dr. Wolman speaks in his paper and which you gentlemen have helped to bring about. As you know, nine-tenths of all the plants in the country have never heard of these things. Such a central planning staff could get the news about, thus raising the whole standard of management.

Finally, I should like to see these general staffs put Yale to work. As you know, Yale has appropriated five or six million dollars for its Institute of Human Relations which is to make a scientific, psychological study of what motivates human behavior. Here we get down to the fundamental basis of control. How do we act and how can we be made to act in unison? Can we adapt ourselves to any gigantic programs of functional control? Yale might feed into these regional planning groups its findings to the great benefit of all concerned.

It may be foolhardy to outline any such program as this, but I do feel very strongly the necessity for attacking this problem. Some day, somehow we have got to come to terms with our billion wild horses.

James T. Madden.[7] Dr. Mitchell gave us a categorical answer to the question and threw it back to the Taylor Society in the form of a rather bare bone without very much meat into which we could put our teeth. I should have liked Dr. Mitchell to take up some of the practical questions connected with the credit, money and banking features of this era of economic change and the one ahead of us.

Is there any practical way in which we can arrive at some economic equilibrium? This indefinite term which Dr. Mitchell has analyzed so carefully for us connotes different things for different minds but it does have the general significance of a desirable end to be achieved. I think there is one step that could be taken almost immediately, without very much expense, toward helping us to get more facts than we now have. We have a lot of fact-finding agencies but they are not properly co-ordinated. We stumble upon these agencies in every government bureau in Washington, but there is one very important class of available facts that is not being brought together with any degree of rapidity. They are the facts from income tax returns. I should like to see the government appropriate a sufficiently large sum to enable the complete statistics from the income tax returns to be made available within a year after the information is filed. There are a great many facts that could be got out of them that would help business men toward solving the problem of control.

---

[7] Dean, School of Commerce, Accounts and Finance, New York University, New York.

Suppose, for example, that the Taylor Society were to prepare a classification of industry that would really mean something; that is, that would allow the largest possible number of homogeneous units to be brought under each classification. If we got the facts for these classifications from the income tax data sheets we could prepare for each classification, for states and economic areas, such as those described by Mr. Chase, and for the nation as a whole, balance sheets and income statements that would tell us not only the profitableness of these undertakings, the ratios of sales to costs and operating expenses and the tendencies in each of the various lines, but they would also enable us to detect overexpansion in plant and property.

We should also be able to secure the co-operation of business men, who are the real beneficiaries, in securing facts of a quantitative character, such as units produced, units sold and units in inventories, in connection with the filing of income tax reports. Thus we could approach Mr. Chase's ideal by voluntary co-operation instead of through compulsory boards, as in the Russian and Italian systems. We would at least have more factual information as to the quantities of goods that are being produced, the quantities that are being consumed and the quantities that are being stocked up. Other factual data, such as the number of men employed, average wages, the number of man-hours involved, could also be secured from business men. They would probably object at first to the additional expense involved in furnishing this information, but if they were given another month in which to file their returns and assured that the information would be published in time to assist them in planning their individual projects in the next year or two, I am sure their co-operation could be secured. The significant thing about the American business man is his willingness to adopt new and constructive measures when they are sanctioned by sufficient authority.

I have dwelt on this at length because I see immense possibilities of usefulness in the collection, classification, co-ordination and analysis of these data. Here is something which we could do almost immediately which would throw into the situation a much more intelligent body of facts than we now possess. I am sure all of you who have ever had anything to do with the present income tax returns or with the inadequacies of the available statistical agencies will agree with me.

I would then go further and try to collect data with regard to individuals. So many are now exempt from filing returns that there are large gaps in our information as to total incomes and the way in which these incomes are classified. There would undoubtedly be objections to furnishing this information, but it is certainly reasonable to ask for such information from citizens who are themselves to benefit economically from its collection. Like Dr. Mitchell, I pass the matter back to the Taylor Society and ask them to study the practicability of these suggestions.

Dr. Wolman brought out significant examples of industrial development on the two sides of the Atlantic Ocean, citing British unemployment. But Germany, on the other hand, has regained her pre-war economic hegemony of Central Europe, and Belgium is making rapid progress, with her workers equally if not higher paid then any others in Europe. I think the difference is very largely explained by the differences in psychology on the two sides of the Channel. I believe the German is closer to us in psychology than any other European, and the Belgian, who is speculative and daring in business as in other activities, comes next; the Frenchman next. On both sides of the Channel there are excellent examples, from which we can profit and these are the results of co-ordinated study and the right psychological approach to a problem.

Leonard Kuvin.[8] The problem of industrial equilibrium is one of economic welfare. It involves the great bulk of our people and affects their material and social life. Practical steps toward the solution of the problem must take into account as the most important element the prevailing chronic condition of an impeded growth in the standard of living. *They must deal effectively with the inability of consumers to acquire for use the goods which they are so instrumental in producing.*

---

[8] Economist, Index Number Institute, New Haven, Conn.

For the first time in the history of this nation, serious attention is being given to economic maladjustments. There is no material derivable from the past to point the way to the one and correct method of averting a temporary industrial depression in the present. However, there are sufficient data available to indicate a condition of disharmony between the forces of production and the forces of consumption. We must examine this material.

Data collected by the Bureau of the Census, in their investigation of conditions in 1923, show that American industry was then idle 25 per cent of the time. Computations based on detailed statistics reveal that the ratio of actual to total possible capacity of manufacture ranged from 57 per cent in the food and kindred products industries, to 90 per cent in the paper and printing industries. Inadequate as they are, these are the only detailed statistics we have for the bulk of American industry. This estimate of idleness derived from them is far too conservative.

The existence of a condition of extensive unused productive capacity has been long known. It was recognized twenty years ago by both Frederick Taylor and Henry Gantt. In their day, the question as to whether or not there are practical steps for the achievement of industrial equilibrium was not discussed. The consideration of the problem of idle machinery and equipment at that time led Taylor and Gantt to the conclusion that American industry working at full capacity could produce in a four- or five-hour working day as much as was already being produced under then existing conditions of output.

Recent findings by other men in the industrial field confirm these contentions. Wallace Clark estimates that plants in which he has been engaged at various times operate at between 40 to 60 per cent of their total possible production. Mr. E. F. Du Brul estimates that the machine tool industry has operated for the last ten years at an average of 65 per cent. Dr. Joseph E. Pogue conservatively estimates that oil refineries of the country operate at about 76 per cent of their rated productive capacity. He points out that about 10 of the 24 per cent of idle equipment could be dispensed with. Mr. H. E. Bates, of Chicago, estimates that the manufactured gas industry operates at 66 per cent of its total productivity and at 40 per cent of its total distributive capacity, and further points out that the investment in distributive equipment is 60 per cent of the investment in all equipment. Mr. E. H. Naylor estimates that the fine cover and tissue paper industry operated at from 63 to 86 per cent of its total capacity between the years 1920 and 1926, with an average performance of 79 per cent of its total productive output. In a recent report to the Federal Trade Commission, Edmund Brown, Jr., estimated the total productive capacity of the nation's flour mills at two and one-half times their greatest production. He estimates, in other words, that the flour milling industry of this country operates at about 40 per cent of its possible output. Finally, the steel industry of this country operates, according to my own estimate, at 60 to 80 per cent of its total possible output.

We have then ample evidence of a condition of unused machinery and equipment. Referring to census data on the number of wage earners and the amount of wages received in industry during the year 1927, we estimate that a 25 per cent increase in operating capacity of the equipment of this country would have resulted in the employment of more than two million workers in addition to the eight million and some odd hundred thousands employed during that year, with a resulting increase in wages of over two billions of dollars. The real obstacle to the employment of all available man power in this country is the lack of proper mechanisms to engage the productive equipment now forced to remain idle and the absence of adequate means to stimulate demand from our own consuming population. Far from overproducing in the social sense, American industry and the American people suffer from a chronic condition of industrial underproduction. Their powers of consumption are limited in a large measure by their lack of incomes. The bulk of the nation's income is lodged in the hands of a minority of potential consumers.

Statistics of income, published by the Bureau of Internal Revenue of the United States since 1916, show persistent inequalities in receipts by individuals whose incomes are large enough to require the payment of taxes. The distribution has remained fairly stable and very much the same; so much so, that the fact of disproportionateness has been recognized by some authorities as constituting a *normal* condition. A comparatively recent study of the lower income classes made by Dr. Fred Macaulay for the National Bureau of Economic Research shows that no law of permanent inequality or fixity of distribution of national income can be laid down.

Studies by Drs. King and Copeland show, moreover, that while there is change in the distribution of income, it has been rather insignificant since 1916. The percentage of the entire realized income of the people of the United States, distributed among 99 per cent of income recipients having the lowest incomes, showed a variation between 1916 and 1926 of no more than 2 per cent. In 1916 these 99 per cent of income recipients shared approximately 86 per cent of the total. In 1926 this same class received, roughly, 88 per cent. During the same interval the richest 1 per cent of income recipients received in 1916, 6.7 per cent of the total income, while in 1926 this class received 7.0 per cent of the total. We see here only a slight disposition toward change. In 1926 the richest .1 per cent of income recipients received 3.1 per cent of the total, while the richest .01 per cent of income recipients received 2.1 per cent of the total.

Dr. Copeland, in a chapter on income in "Recent Economic Changes," shows that between the years 1918 and 1926 the wealthiest 10 per cent of the population of this country received between 29 and 35 per cent of the nation's money income. This country reached its closest approximation to equality of distribution of income during the year 1920 when these 10 per cent of the population received 29 per cent of the income. The year 1921 was the year of greatest inequality when the 10 per cent group received 35.3 per cent; in 1926 the same group received 32.9 per cent.

These data are significant in view of the fact that the bulk of our population, constituting the greatest outlet for manufactured goods, receives a disproportionately small share of the nation's income.

Professor Tugwell, of Columbia University, estimates that 86 per cent of the buyers of manufactured goods are wage earners. The remaining 14 per cent consist of various enterprisers and property owners. Together with this estimate, we must remember that in 1926 the share of the total realized income in this country that went to employes was 59 per cent. The portion which was distributed in the form of rent, interest and dividends was 23 per cent while the portion that was withdrawn as profits amounted to approximately 19 per cent. In short, we see from these figures that the greatest possible market for American manufactured goods is stifled by a lack of purchasing power.

Funds that should be paid to labor to nourish consumer demand are put back into unused equipment to further aggravate a bad condition. Excessive overhead charges resulting therefrom further limit the ability of the market to absorb the products of industry. The vicious circle of excess capacity and limited demand cannot be penetrated in a severely simple fashion.

The one major economic force that prevents industry from courageously and spontaneously realizing full productive capacity is the ever-present risk of loss. Industries operating under partial capacity do so at a price level compatible with market conditions. If producers were to operate, under conditions of unchecked competition, at 100 per cent capacity, they would soon arrive at a state where the sales price of their goods would impinge upon their total cost. Private enterprise could not survive such conditions. The risk involved in a possible fall of the sales price of commodities, produced in large quantities at low profits, is sufficient to discourage the extended use of productive capacity. If demand can be stimulated to such an extent that the operation of industry at full capacity will not result in a fall in prices to a point where the manufacturing cost is likely to be larger than the sales price, the problem will be solved.

Many practical suggestions have been advanced in the past to solve this problem of industrial disequilibrium. They are indicated in the written works of Professor Hudson B. Hastings and of Messrs. Foster and Catchings. The paper presented by Mr. H. B. Brougham before this society in December, 1927, advocated the release of extended bank credits into capital construction, both public and private, antecedent to the short swings of business that threatened a downward trend.

At the present time two methods are being put in operation under the leadership of President Hoover. The predominant method is psychological. Business conferences with the nation's leaders of finance and industry serve by the restoration of confidence the purpose of keeping business on an even keel. The announcement of a reduction in taxes serves the same end. The promise of releasing funds for public works, derived from credit issues as well as from revenues, serves also to encourage business at the present time. They are excellent palliatives.

An announcement by Henry Ford, on the other hand, of an increase in wages and of a reduction in the price of his commodity serves a very important additional purpose. It points the way to the permanent solution of the problem.

It will be recalled that during the war this country indulged itself for a period of three years in comparatively unretarded production and consumption. The secret of this condition was the fact of active consumer demand at home and abroad. Wages at that time rose faster than did commodity prices. In peace time, however, the means necessary for institutionalizing this secret of relatively higher wages is wanting, with the result that production and consumption are allowed to get out of gear and throw the economic machine out of balance.

It is not the mere temporary raising of real wages that brings on the condition sought. What we seek to effect is a permanent economic change. We seek not equilibrium alone; *what we desire is a stable upward movement of the standard of living.*

To guarantee both higher wages and a further equalization of income and the resulting elevation of the general standard of living there must be worked out on a national scale an effective method of credit regulation and control. Those industries already overequipped and able to produce more than can be presently consumed should be temporarily curbed in their operation. Other industries not sufficiently equipped should be given every opportunity to expand. The mechanism of the rationing of credit to industry need not be called into play just so long as private enterprise permits itself to be regulated for the benefit of society as a whole. Competitive enterprise can readily adapt itself to a well conceived mechanism of discriminatory discount rate control.

With proper indexes of the general standard of living, with adequate data indicating the potentialities and performance of various industries and with a proper goal set in advance, there should be little reason for the persistent chronic disproportion between productive and consumptive capacities.

When we use such means we shall be one step nearer the practical achievement of a program of industrial equilibrium.

Henry P. Kendall.[9] The discussion this evening has seemed to me to have some of the most significant possibilities of any discussion that the Taylor Society has had for a long time.

A group of men is now being gathered together in Washington to advise the President informally. This may lead to a permanent advisory council—a soothing move. Whether it is going to be anything more than soothing depends on whether these men find something practical to do and have the courage to do it. I had not intended to take part in the discussion this evening, but in view of the theme and the need of action, I want to relate what seems to me a possibility of help in one industry.

As you know, the textile industry, in which I am engaged, operates cotton and woolen mills on a forty-eight hour week, and on a single-shift basis, in Massachusetts, because women and minors are not permitted to work at night in Massachusetts. In other New England states mills are operated on a fifty-four hour week; in North and South Carolina, on a fifty-five hour week, and in some of the states farther south and farther west, on a sixty hour week. The textile industry is a sick one. It has a productive capacity, on day and night runs, of somewhere between 135 and 140 per cent of consumption. And yet public opinion has not crystalized to the point where it can compel a reduction in working hours.

Last week I thought the situation over and wrote President Hoover a long letter, recommending that he add to his group of advisors a man familiar with the textile situation, a man who knows the industry in both the North and South and who has vision and courage. I believe that such a man, with the backing of the council and the President, might crystalize opinion to the point where we could bring about, by mutual agreement, a reduction in working hours in the textile industry, North and South, to not more than fifty hours a week—and this without a reduction in the pay that had been paid for from fifty-four to sixty hours a week. In addition, a mutual agreement might be reached to fill every opening for a woman on the day shift by the transference of a woman from the night shift, and to fill every vacancy on the night shift by a man. I have demonstrated in one of our mills that this is a practical suggestion, and have given instructions that each manager carry it out in the other mills.

---

[9] President, The Kendall Company, Boston, Mass.

What would be accomplished? A reduction in working hours without a reduction in pay would mean greatly increased efficiency in an industry working at 65 per cent productive time, with operatives living under more normal conditions with more pay and more leisure and therefore better standards of living. It would also help in part to decrease permanently the difference between production and consumption.

Professor Madden's idea is interesting. I am not enough of an economist to know whether the information given out might not stimulate competition instead of controlling it, as Mr. Madden hopes. Perhaps before these sessions are over some of the economists and students who are here can give us some ideas on that point.

In the meantime, if Professor Madden can put his suggestions into proper form to be endorsed by the members of the Taylor Society and the participants in this meeting, and if other concrete suggestions can be formulated and sent to the President, I am sure they will carry weight and help to put the Taylor Society on record as a constructive force in this present situation. It seems to me that the papers presented this evening and the suggestions thrown out by Mr. Chase and others may make of this evening a very fruitful occasion.

I hope that we may be able to transmit these constructive ideas in such a way that they may be helpful to the conference in Washington. The one thing that I fear about this Washington Conference is that it may turn into a mere gesture, with only a soothing effect for the moment. And this will be the result unless individuals and organizations like our own do something constructive. You know the men who have been called as advisors. They are for the most part presidents and presiding officers of large industrial organizations, and those of you who have had experience with large industrial organizations know that very frequently the type of man who is president is quite without new ideas and courage. In looking over the list it seemed to me that there were only a few men who might have a combination of ideas and courage. Therefore we as a society in conference assembled on these problems may be able to make a real contribution at this important and critical time.

C. B. Hammond.[10] The discussion this evening has seemed to me to assume that equilibrium is generally desired. If I am right in this I am afraid that the assumption is not wholly correct. Equilibrium is the ideal principle of philosophers, scientists and engineers, but business has become what it is in the absence of equilibrium. Americans are traditionally traders. They are interested in speculative profits; as individualists they are fond of what has been called the unearned increment. Fluctuations are fruitful sources of profit to them and always have been; and this interest is not by any means confined to Wall Street. There may be times, and the present is I imagine one of them, when business men as well as philosophers and scientists feel that equilibrium is most desirable, but I think a great many of them would not like it all the time.

Hudson B. Hastings.[11] I think this problem of equilibrium ought to be broken down and the different types of disequilibrium considered. First, there is that maladjustment between different types of industry which has resulted in individual industries being grossly overdeveloped. The correction of that seems to me to be along the lines started by Mr. Hoover, as Secretary of the Department of Commerce, in the collection and dissemination of more information as to productive facilities, sales and stocks on hand. I believe that in addition to publishing this information in the Monthly Survey of Business of the Department of Commerce, it might be wise to proceed along the lines suggested by Mr. Chase and have an interpretation of this information by representative groups in the different industries.

Then there is another type of disequilibrium which has resulted in the flooding of markets by industry as a whole, such as we experienced in 1919 and the early part of 1920. I think those who have studied the question will agree that this type has been due in a large measure to general price inflation. The rapid and continued upward movement of prices has always resulted in the accumulation of stocks of goods all along the line from the manufacturer to the retailer, because of the anticipated further increase in prices. We have just gone through the same sort of an orgy in our stock market, and what is clearly needed is a review of our whole banking structure in its relation to the orderly progress of finance, business and industry. We should consciously set ourselves in our banking system toward eliminating that type of disequilibrium which results in price inflationary movements. I think that will remove, in a large part, the ups and downs of what we call the business cycle. We are moving slowly but surely toward that goal, not only in this country but abroad, through the efforts of the Stable Money Association and others who are interested in this problem.

---

[10] Irving Trust Company, New York.

[11] Professor of Industrial Engineering, Sheffield Scientific School, Yale University, New Haven, Conn.

This crisis we have just passed through has not been a business crisis but a purely financial one, due to the fact that prices of commodities were not inflated as the prices of stocks were inflated. Whether that is the result of conscious action on the part of the Federal Reserve Banks makes no difference. The fact is that we did not have the inflation and we are now reaping the rewards. But we still have ups and downs in general business activity. There were fairly well marked declines in industrial activity in 1924, 1927, and another decline, which is still in progress, began about five months ago.

Why do these declines take place in spite of the fact that we have had relatively stable prices for commodities? The answer lies in the inequalities that exist from time to time in purchasing power of people as a whole, compared with the total value of goods produced. Various reasons are given for these inequalities, such as increased efficiency of machinery and increased efficiency of labor. Until we find a way of measuring the value of goods produced in terms of purchasing power we shall never have a real answer to this problem of industrial equilibrium.

I think I pointed a way in a book (*Costs and Profits*) which I wrote for the Pollak Foundation some years ago, but that is too long a story to tell here. I do want to say, however, that I disagreed with one of the conclusions that my former associates, Mr. Foster and Mr. Catchings, got out of that process of reasoning. In their so-called "Dilemma of Thrift" they hold the saving process responsible for industrial disequilibrium. I believe that the dilemma of thrift is a purely economic nightmare and that we can save a practically unlimited amount without interfering with the productive process and full employment.

We should have convincing answers to such questions as: Will the increase in wages advocated by the President, and acted upon by Mr. Ford, or a shorter working week, really tend to bring about a balance between goods produced and purchasing power? I do not believe they will in the long run. Will an enlarged program of government work, such as that now proposed, tend to bring about balance between the two? Again I think not, in spite of the general opinion on that subject. Does tax reduction tend to restore permanently a balance between production and consumption? Again I think not. Some of these may be temporary aids but they are not permanent solutions.

The above questions are all a part of this general problem of equilibrium and, as I have said, I do not believe we shall make substantial progress in solving it until we devise a sound method of measuring the consuming power of the public in terms of the value of goods produced.

Norman Lombard.[12] It will be of interest to members of the Taylor Society to hear the views of Mr. Carl Snyder, General Statistician of the Federal Reserve Bank of New York, as he expressed them in his annual address as president of the American Statistical Association in Chicago last year.

"It is not without interest that the phrase 'hard times,' so widely prevalent in economic writings for several generations, has almost disappeared from the vocabulary of our own. . . .

"These later periods of financial and industrial disturbance seem largely due to a state of imbalance which appears to arise from a disparity between the growth of the volume of trade and production, on the one hand, and the volume of credit on the other.

" . . . . If, then, the augmentation of the credit supply is the vital factor, we have here what may well be an object of the most general concern, especially if, as seems true, this is in large measure subject to rational control. We have learned to measure the rate of our industrial growth. We may

(*Continued on page* 54)

---

[12] The Stable Money Association, New York.

Control and Size in Management

What Are the Controllable and the Uncontrollable Factors in Management?[1]

By **HOWARD COONLEY**
President of the Walworth Company, Boston, Mass.

THERE are no wholly controllable factors in management. Those that might theoretically be considered controllable are a question of degree of opinion. There is nothing so responsive to psychological influences as management, and anything that reacts to personal influence is not strictly controllable.

Some factors that might be considered naturally uncontrollable come into the class that might loosely be called controllable when they are the result of scientific research. The human mind is receptive to logical persuasion. Through logic and the effect of personality, factors that might ordinarily be uncontrollable can become highly controllable.

The science of business has made tremendous progress during the past ten years. The more science is applied to business, the more controllable will the factors be. The most advanced thinkers have become convinced that there are broad and definite rules of business, just as there are rules of health or even of mathematics.

The great agencies of economic study have proven that there are definite business trends as well as seasonal influences that can be accurately forecast. They have also proved that there are comparatively simple ways and means of estimating markets and potentialities. When these rules have been applied to cases of individual management, they supply a background of information that can be used to control factors that otherwise would be uncontrollable. Science serves to separate the human from the mechanical effort and confines within lesser limits the psychological problems of business.

For purposes of discussion I shall endeavor to subdivide the two groups of factors and present them in a form of more definite cataloging than I could logically argue. At the same time, I am confident that in this way I can present the subject more intelligently.

Tangible, Knowable and, Therefore, Largely Controllable Factors

Fundamentals

Human beings are naturally curious, and are keenly interested in picking things to pieces. As the child is eager to find out what makes the noise and movement in a mechanical toy, so the grown-up is keen to see "what makes the wheels go round."

No real knowledge is permanently acquired without research. We may remember a few tables of weights and measures, but we can't reproduce answers to arithmetical problems without picking the example to pieces. Business problems are simple in their essence but complicated in their application. True analysis discards the web of complication and arrives at the simple kernel caught in its center. There are no problems of administration that cannot be subjected to analysis in some form or other.

Specific Factors That Can be Controlled

It is clearly possible to specify materials both as to quantities, grades and kinds. As a matter of fact, every executive controls materials, although he does not always do it effectively or scientifically.

We can assign our labor to individual departments and to individual jobs. As a matter of fact this has become common practice. We can set up policies to govern a great majority of the conditions that arise within the field of an administration. After all the policy is merely an economical device for specifying uniform procedures governing repetitive situations. Following the creation of the policy we adopt a precedure which is merely a specification for the use of prearranged methods and forms for executing the policy and recording its results. There can be no question that one executive might adopt a policy quite opposite from that of another. At the same time the policy is his own free choice, and to that extent controlled.

---

[1] Paper presented before a meeting of the Taylor Society, New York, December 5, 1929.

Although I cannot feel justified in including volume of sales among the controllable factors, yet we can definitely include control of expenses and in the control of our expenses influence indirectly our sales volume and price.

The business budget is undoubtedly the best instrument of control.

Influence of the Sales Budget

While I cannot include the sales budget as one of the controllable factors, I feel that it is essential to give it a moment's consideration in order to develop the balance of the items included in the controllable list.

Without intelligent estimating of sales volume, it is impossible to control the important elements of the budget. Intelligent estimating dips first of all into those fields where conditions are most variable. It is surprising with what accuracy intelligent conclusions can be reached in fields which at first seem unexplorable. Once the step is taken it is found that possibilities prove probabilities, and probabilities actualities. Sales volume is controllable to the extent that a situation that is known can be more intelligently handled and the handicaps more easily overcome.

Many executives have found their sales forecasts so accurate as to make them confident that they can not only control their materials, their labor and their finances, but to only a slight degree less their profits.

The Production Budget

Within the controllable group the production budget should definitely be listed. Granted a moderately accurate estimate, a production program can be established and controlled, and the problems of uneven production counteracted with a consequent improvement to efficiency and labor turnover. The inventory of materials, supplies, work-in-progress and finished merchandise can be accurately controlled and definite schedules set.

Intangible, Unknown and Uncontrollable Factors

It is a much more simple problem to list those factors that come within the uncontrollable group.

Sales

I have already touched the sales factor to explain my reasons for including certain production items within the controllable list. In estimating sales there is always the difficulty of setting standards for purchases that are made to cover price advances or to insure against a probable shortage. Of course, in the long run they do not influence substantially the total business, but they are important items in an accurate budget.

In a business as complicated as that of the Walworth Company, when demand ranges from several million pieces of one staple to only a few pieces of some slow-moving article, estimating by item is difficult, yet we have found it possible. The sporadic demand, however, on these slow-moving articles prohibits rapid turnover of inventory and, therefore, complicates the machinery of control.

Labor and Personnel

The labor market is highly seasonal, and is at its best when demand is at its lowest. Therefore, its control is difficult, and the only sound method to safeguard it is a planning system that spreads the employment on an even basis over the entire period under control. The productivity of labor is again difficult to handle, and must depend not only on the physical surroundings and equipment furnished the worker but on the attitude of mind which may need to be developed toward his work.

Financial

The financing of business, using this expression as a broad term, may be planned but cannot be absolutely controlled. It is seldom possible to lay down a financing formula which can be adhered to because of the difference in conditions which are presented to the executive. Where businesses are enlarged methods used must inevitably depend upon the situations of the units acquired or the fields to be explored. This problem in itself is so large as to warn me off of a discussion in a general paper.

Marketing

The field of marketing deserves a prominent position today in the uncontrollable factors. Perhaps in the future business scientists may list this as a tangible, but today this would be impossible. Scientific marketing does not exist. The reputation of marketing as a fertile field for research, however, has become generally recognized. It involves the question of methods of distribution; for example, we sell through jobbers or individually owned resale units, or direct to the consumer or through any type of middleman. It involves a study of fields of activity, and types and sizes of customers. It is an intangible of intangibles.

Competition and Trade Practice

One of the most discussed subjects today is the question of competition and trade practice. Some years ago the Federal Government was definitely antagonistic to competitor co-operation. Today it looks upon such co-operation under restricted conditions with undisguised favor. Competitive cooperation may bring about great good to the producer and to the ultimate consumer. Through such co-operation only is it possible to do away with unfair practices, and yet the field is one that holds great dangers and should be carefully safeguarded.

Psychology

Of all the uncontrollable factors, however, that of psychology is the most evident, and yet psychology plays a tremendously important part in business as it does in football and baseball. The executive who can gain the confidence and affection of his employes can capitalize this in definite economies. Given the same conditions and equipment and the same class of employe, a leader with the ability to inspire those under him can show economies that can be figured on a percentage basis much higher than that normally used for a cash discount, and yet personality plays a lesser part today than it did a generation ago, and is bound to still further decline in its influence as business becomes more and more a science.

In endeavoring to set up this catalog of things controllable and uncontrollable, I have ventured into a difficult and perhaps a dangerous field, yet it is in such fields that we find our greatest interest and greatest possibilities. Perhaps its very indefiniteness will serve to show the necessity of further research into the realms of the business unknown.

After all, business is established to serve the need of the community, that is, of the consumer, and to provide employment to a proportion of that community which will enable them in turn to become consumers. Therefore, one of our prime problems is to decide what our position in the business world should be, whether we should aim to sell what we make or to make what we can sell.

It is through research that such problems must be handled. The consumers' needs are our natural yard stick, and the justification of our producing any item or line must be decided by the opportunity and need on the part of the consumer. Research is the background of intelligent management. It not only dissects and analyzes, but it seeks the opportunity to create. It places the burden on that part of the human anatomy best fitted to carry the burden, and applying research to the subject before us, the possibilities for its use within the troupe of tangible, unknown and uncontrollable factors are undoubtedly greater than that of the field already known and controlled. It opens up a vista of opportunity that whets the appetite of the keen executive.

(Mr. Coonley's paper was presented by Mr. Joseph H. Barber, Assistant to the President of the Walworth Company, who concluded with the following comments of his own.)

Mr. Coonley said that research seeks the opportunity to create. In part it accomplishes this end by bending previously unrelated factors all in a single direction toward executive decision. Out of the intangible mists, it would condense the dew of tangible action. And, as a rule, such executive action is best secured by constructing from known and tested materials standards by which to judge and evaluate the unknown.

Clearly, the greatest profits are yielded at the point of best equilibrium between the controllable and the uncontrollable factors. Here is opportunity for doing a man's task. It would be foolish to send a boy on a man's errand. It would be equal folly not to employ a skilled diplomat for an important commission. Research is applying for the job. With its ability to discover laws, establish yardsticks, eliminate old losses and create new gains, Research is the agent who will make it his job to promote harmony and equilibrium between the unknown and the known. The following comments will suggest how the agent carries out his commission:

Research discloses laws that may be depended upon in a practical way. For instance, there is evidence that Nature works according to a so-called "law of concentration." In volume, one-fifth of the manufacturing units in the United States will dominate the total of all United States production. By individual items, one-fifth of those catalogued by a manufacturer will comprise a large majority of total tonnage and contribute nearly all of the profit. One-fifth of the individual customers will consume the bulk of the output. One-fifth of the economic factors will tip the scales one way or the other. Executive attention must be balanced well against these relative importances. It must be directed toward the major factors and withdrawn from the end items if there is to be equilibrium such as will assure maximum profits.

At the other extreme we find the so-called "law of discrimination," sometimes called the "law of sensations." As such, it is stated "sensations increase in arithmetical progression as the stimuli increase in geometrical progression." Phrasing this in business terms, we may say that, as we approach the margins of things, there is more resistance to further increases. It takes a bigger amount of effort proportionately to secure only an equal result, or, for an equal effort, returns will be most meager.

There is also the "law of natural balance." Economic forces tend to strike an equality or parity the one with the other. If there be temporarily too much industrial building, for instance, it will penalize and restrict residential building. In financing, there should be some share of permanent capital contributed to the business by bonds. This will magnify the percentage return yielded to the stockholders who take the greater risk. On the other hand, there should also be some proportion of current borrowings from the banks, for neither bondholders nor stockholders should invest in the business permanently all the capital that will be needed only through temporary periods of maximum activity. At the point of best equilibrium, profits will be greatest.

Net profits are a summary of all the variables affecting the business. If profits decline, we may choose to blame competition. If they increase we may like to attribute it to our wise direction. As a matter of fact, profits are as often contributed by fortuitous circumstances as losses are occasioned by conditions beyond the individual administrator's control.

Speaking generally, it is the competitive market situation that fixes the selling price. There is in every industry the marginal producer whose volume of product is necessary to satisfy the grand total of demand, but whose costs are so high that he cannot continue to produce unless the price is maintained. If prices declined, this producer would close down. The market, being short of his product, would bid average prices up enough to cover his costs and keep him going.

In the long run this marginal producer fixes the industry's price level. In this sense then, any administrator may consider the market price level as fixing the standard of income within which he must operate at less than the marginal producer's cost if he is to make a net profit.

The administrator will predetermine what his profit shall be by predetermining the relative emphasis he will place upon each of *several* excellent principles, policies, or methods. Discussing any one of these separately, it may appear to be "the last word" or "the one best way." As a matter of fact, in application, one excellent principle may need to be subordinated in part to another principle of equal excellence.

For instance, in the matter of organization, the line and staff organization may be best in some places. So-called "functional organization" is the only answer under other conditions. With Walworth, it seems more suitable to have a line organization with respect to the factory and sales units in their contact with headquarters; whereas inside the individual works units, the functional organization is admirably suitable.

Again, in contemplating seasonal fluctuations vs. cycle trends, we may appreciate that a retail department store might well apply 80 per cent of its emphasis on studying and caring adequately for seasonal variations, with only a 20 per cent relative emphasis upon business cycle factors. With Walworth Company, on the other hand, it is essential for us to arrange 80 per cent of our emphasis according to conditions of the business cycle with but a 20 per cent relative emphasis upon seasonal factors.

Likewise, there must be discriminating emphasis with respect to the problem of stabilization of employment. In the automobile industry, where only 10 per cent of the cost is for labor and 90 per cent is for material and overhead, it would be most logical for them to vary their labor sharply in order to avoid material and inventory accumulations. With us, on the other hand, labor and technical skill play so important a part in our costs that it is our more appropriate aim to keep the labor stabilized and to vary the inventory. Thus in all aspects of administration, with due deliberation we can aim for that best equilibrium that assures greatest profits.

Is There an Optimum Size of Organization?[2]

By **JOHN H. WILLIAMS**
Consulting Engineer, New York

THE ANSWER to this question is to my mind largely one of time. What would have been true ten years ago certainly is not true today and it will be less true ten years from now. The stage of development that has been reached in the various matters discussed by the previous speaker, determines to a large extent the point in size at which an organization becomes most effective.

Dr. Person asked me to make an outline of this talk for those who were to discuss it. As it is a rather complex subject to deal with in a concrete way I am going to read my outline; so that you may have some idea of my direction, and will then discuss certain features which seem to need elaboration.

1. There is no optimum size for organizations in general.
2. Theoretically, there is no optimum size for each particular organization.
3. Practically, there is an optimum size for each particular organization dependent upon:

a. The extent to which the personal equation (as distinguished from a repetitive function) enters into the service or product of the organization.

In other words, an organization rendering a personal service must be much smaller to be effective than one whose product is produced through repetitive or continuous process methods.

b. The extent to which authority is decentralized and there is an incentive for co-operation between the managers of the units exercising authority.

As an organization increases in size the multiplicity of detail automatically brings about decentralization of activity. Unless authority is decentralized proportionately with activity and there is an incentive for its effective use, decisions are so far removed from the point of action as to be ineffective and to materially slow down the whole procedure.

c. The extent to which the accounting procedure is standardized on a basis which will enable effective comparison as between units in terms which will be stimulating to the managers of such units.

Accounting is the measuring rod of management. Without it the whole thing becomes purposeless from an economic standpoint. If you have two organizations comparable in every way, one, however, with comparable accounting; that is, with full knowledge of relative performance in terms of responsibilities, and the other with ordinary accounting, where results are not comparable in terms of responsibilities, this one difference may well determine the point of optimum size.

Probably the most critical time in the life of most organizations is that in which they become too large for the domination of one man and before they become adjustable to multiple control. The major necessary adjustments to make multiple control workable are as follows:

1. The replacing of the world-old idea of authority by birth, ownership or rank with the concept of authority by fitness and function. This involves the concept that Smith may have authority over Jones in certain matters and Jones over Smith in others.
2. The development of the idea of leadership as a substitute for authority on the part of the chief executive.
3. Visualization of the undertaking in terms of responsibilities and the assignment of authority on that basis.
4. Setting up accounts in conformity with authority in place of concepts of expense.
5. Introduction of a flexible budget and some form of reward, which should be in proportion to results accomplished, for persons exercising authority.

The world-old idea of authority by birth, ownership or rank must, according to our modern concept of management, be replaced by authority by fitness and function. In war and in the days when might was right, authority was necessarily all inclusive. The head or dominant person in an army, factory or home was boss over everything. The person under him was equally boss over everything, but subject to him, and so on down the line. To the extent to which this old idea has been supplemented by the concept of authority on the basis of fitness and function depends very largely the answer to the question as to the point at which any particular organization is most effective. I am using "fitness" and "function" in the broadest sense of these words. What I mean is that type of fitness and function which gives Smith a natural advantage over Brown in the exercise of authority in certain matters and Brown over Smith in certain others, according to their respective information and the part of the work of the organization for which they are responsible.

---

[2] Paper presented before a meeting of the Taylor Society, New York, December 5, 1929.

Closely related to this is the question of the substitution of leadership for authority on the part of the chief executive. The effectiveness of authority is directly related to its place in the scheme of things affected. As an organization increases in size, authority must necessarily be decentralized and it is necessary to have someone to co-ordinate the policies upon which the decisions of the various departments are based. This calls for a faculty of leadership as distinguished from execution. The extent to which the chief executive is able to bring about co-ordination without the exercise of authority, which always complicates a situation, bears directly upon the size at which an organization will be most effective.

A third thing that bears very directly upon the question under discussion is a clear vision of ways and means; that is, seeing a big problem in terms of a lot of small ones. As long as a problem is seen only as a whole it is not understood. Take for example an engineer designing a complicated machine. Imagine the mess that would result if he tried to design it or make a working drawing of it as a whole. Instead he divides the machine into a number of easily distinguishable functional groups. He first develops a plan for each group and then a plan for their working together as a whole. It is only in this way that complex problems can be effectively solved. Though the techniques of the mechanical engineer and the manager are different in proportion to the materials with which they deal, their mode of thinking and procedure must be essentially the same.

There is always the need for a means of stimulating interest on the part of those having responsibility and authority. Money rewards alone will not accomplish the desired result, but they are the best understood and therefore more easily effective. I have come to agree very largely with Robert Wolf in the effectiveness of non-financial incentives, but I have not lost any of my faith in financial incentives. The satisfaction a fellow may get out of a properly handled financial reward may be even more effective than the reward itself.

The determination of a basis of reward brings us back to the question of accounting. I am not going into the subject of the flexible budget today, except to point out its difference from the old type of budget and to suggest that a flexible budget properly made constitutes a measuring rod upon which financial rewards may be based. By a flexible budget I mean a *list of the items* which affect the cost of a department or undertaking, priced in terms of some suitable unit, such as per day, per hour, per ton, per pound, per mile, per yard, etc. The budget itself is not made up until after the fact, that is at the end of the week, month or quarter, as the case may be. The various items are then computed on the basis of their quantitative participation, at the predetermined unit rates. They are added and compared with the actual cost of the department. Comparison can be made in as small or large units as desired.

This is a fascinating subject and I should like to go on talking about it for the rest of the day, but I think probably more will be gained by my stopping at this point and throwing the matter open for discussion from the floor.

Discussion

Richard A. Feiss.[3] I do not quite agree with the idea that the chief executive should no longer be the "boss." I do not see how you can get away from the fact that it is necessary to have one person responsible for the successful organization and management of an enterprise. And if you have at the top a good organizer and manager, there is practically no limit to which an organization can be expanded, provided you mean by expansion the distribution of the load by functional responsibility rather than by personalities. In this way you get decentralization for action and centralization for control.

The controllable factors in industry do not seem to me quite so vague as Mr. Coonley has made them appear. They are merely the factors that are capable of analysis and for which predetermined standards can be set up against which to measure performance. I agree with Mr. Williams that accounting should help to establish these measures of performance.

---

[3] Consulting Management Engineer, Boston, Mass.

There are several types of accounting. As it is commonly conceived, it has only to do with the keeping of books of account and with the function of the treasurer. In the sense in which Mr. Williams uses it, it is something different. It has to do with the problems of managerial control, which are often conceived of as accounting problems but which really are not. Payroll and expense analysis, perpetual inventories, balance of stores, are maintained for the purpose of controlling the use of materials and the expenditure of money and eventually the cost of the product. As such they are more in the nature of managerial statistics than in the nature of accounting.

I do not agree with Mr. Coonley's statement that there are no completely controllable factors. I think there are many factors that are controllable in terms of the rather crude definition I gave above. It all comes down to the scientific organization of an enterprise. Scientific organization of enterprises is the fundamental idea behind scientific management. As Mr. Williams says, you must analyze an organization to ascertain its functions. If we start there I think we have gone a long way toward the solution of our problems. You can determine quite definitely the functions of your enterprise and the type of personnel necessary to carry out these functions. You can also determine how much to spend on supervision and general payroll, on stores and supplies consumed, on travel and special services, etc. When a budget such as Mr. Williams suggested is broken down and items like the above segregated according to functional responsibility, you can get real expense control. Likewise, if you put scientific management into your production departments you can establish definite standards against which to measure performance and get a definite and exact control for production. The same thing applies to materials. One of the things greatly neglected today is the proper control and budgeting of materials in all inventories, but it is possible to control them and to control them exactly.

I agree with Mr. Coonley that the control of markets is at present impossible. Incidentally, I think a great deal of the market research that is being conducted today is ineffective, because it approaches the problem from the wrong end. The market is analyzed first instead of beginning with the analysis of organization potentialities and profit requirements. By the application of scientific principles within an organization you can determine the minimum of sales necessary to operate at a profit and thus establish a definite basis for sales budgeting.

To sum up, I would say that the chief factors in the solution of the several problems involved in the papers under discussion are a scientific approach to the problems of organization and management and the capabilities of the chief executives.

F. A. Silcox.[4] The answer to both of these questions seems to me to be "yes." The primary problem is one of control or lack of control, through the ability to use the instruments of control. The instruments of control have been refined and refined, and probably will continue to be refined.

Mr. Coonley says that there are no wholly controllable factors in management. A great many management contracts assume that they are *all* controllable, with the possible exception of strikes, floods and other acts of God. Managements assume the responsibility of delivering orders for particular types of goods at particular times and places and seem reasonably well able to accomplish their ends. The particular type of organization used is not important because they are apparently all sufficiently under control to guarantee the delivery of products at a sufficient profit to keep these organizations in business.

Mr. Coonley goes on to distinguish between internal and external factors of control. We have been discussing for two days the external factors and our power to get hold of them because of their important effect on the internal factors. A test tube in a laboratory where rayon is produced is able to dynamite the whole textile industry, and these things are constantly coming out of laboratories. It seems to me tremendously important for the control of the internal factors that the best intelligence and all the available scientific facilities be brought to the analysis of our sources of raw materials. If we can get raw materials in the place where we want them we can bring a great many of the factors in the internal development of our plants within the practical limits of control.

---

[4] Director of Industrial Relations, New York Employing Printers Association, Inc.

I think there are controllable factors even in this vague field of psychology on which Mr. Coonley lays such stress. We know, again within reasonable limits, that we are going to get violent reactions to certain things that we do. There are certain elemental things in the handling of men that managements are going to be compelled to do eventually. But neither management nor labor can be compelled too fast. Some years ago Langley worked out an instrument that would measure one-millionth of a degree of heat. The thing had been absolutely unheard of. It seems to me that we in the field of management are wresting the known from the unknown at a rapid rate. Our progress can be measured by the extent to which we pick managers with imagination who are capable of using the thousand and one available instruments, with some degree of precision, to accomplish fairly clearly set-up objectives. I am not trying to oversimplify this tremendously complex and variable problem, but it seems to me that we can make it seem too complex. We really have the job in pretty good shape for the present time.

I want to take issue with Mr. Coonley on his point concerning leadership. I do not believe that as these instruments of control become more and more refined we are going to have less need for the finest quality of leadership. I think we are going to need men of exceptional ability to use this wide variety of information that is being made available through research. Evidence of management's appreciation of this is to be found in the labor scouting that is going on in all our universities. A large number of our corporations have men out "spotting" youngsters in their senior, or even junior, years who have the capacity to think in terms of these new instruments of control. They are taking them into industry. It would be hopeless to take in men of limited capacities and expect them to use these instruments with any degree of precision or effectiveness.

The general manager, whether he is technically trained or not, must first of all, in my opinion, possess imagination. He must surround himself with technicians who will enable him to tap all the sources of information in fields that would otherwise be uncontrollable. Mr. Williams pointed out that it is much more difficult to get hold of controls in some of the service industries than it is in the repetitive process industries. I think that is incidental to the main job. Whether it is running a can factory, a printing plant or a textile mill, management today has got to avail itself, through the highest type of leadership, of all the instruments of control and has got to take its part in extending the field of control continually.

One problem is to get management to see that these instruments of control are available. Competitive conditions will to a large extent take care of that. What the limits are to the instruments of control that can be developed through the research departments that are being set up, I think no one can say. We used to think diphtheria was an act of God but now we control it. We must develop the types of mind that will use the instruments available and continue technical investigations that will gradually extend the fields of control.

Walter Rautenstrauch.[5] I feel that the problem of control divides itself into two general fields of endeavor. One is quantitative control and one is qualitative control. Qualitative control is that type of control which fixes policies and determines directions in which an organization shall grow and develop. I am rather inclined to believe that qualitative control is more readily realized than some types of quantitative control. With qualitative control we must necessarily have that type of mind which takes ideas, conditioned by facts, and integrates them into judgments, that knows as a result of experience that certain policies are best for the development and growth of the business.

Mr. Coonley brought out two other phases of the problem of control. One is the psychological phase and the other, although he did not give it that specific name, is the economic phase. In the field of psychological control I think we might take a lesson from Tammany Hall and the Roman Catholic Church. These organizations have a great deal to tell us of how to control large masses of people. We must ask, however, if we wish to control by indoctrination or by conformity. There are laws of human nature just as there are physical laws. There are laws by which people associate themselves together for the accomplishment of certain results. If we discover these laws and learn to act in accordance with them we progress. By this kind of direction we conform rather than control. I think there is an important distinction. On the economic side also too many things are matters of opinion. A quantitative basis for dealing with economic factors must be worked out, but it is my opinion that it will be some time before this is accomplished.

---

[5] Professor, Industrial Engineering, Columbia University, New York.

I should like to suggest that in attacking this problem of the proper size of organization some means of measurement be established. By size of organization the total number of men employed might be meant, or the number employed in direct labor, or the number employed in indirect or service labor only. There are possibilities of confusion here that call for more exact definition of terms. Mr. Williams has referred to the kinds of projects that an organization must accomplish as functions. I like to use the term units of work. In order to determine the proper size of an organization it is necessary not only to discover the units of work inherent in a given organization but also the number of people necessary to accomplish the work of these units.

The engineer or manager must be able to answer such questions as the following: First, is the organization too large for the work to be done? In other words, can the same work be done by fewer people? Second, is the organization too small for the work to be done, i.e., should more people be at work if the work is to be done economically? Unfortunately there is a popular belief that the percentage of expense for factory labor should be low, whereas organizations could frequently work more effectively if the amount spent was much higher. This would involve a lowering of the expense for direct labor and an increase in the amount spent on service to make labor more effective. In the manufacturing division of a given business we may find one service employe for every direct labor employe. In another organization we may find one service employe for every two direct labor employes, and in another, two service employes for every direct labor employe. In the merchandising end of business you may find the same differences in ratio. Are we to compare industries on the basis of the number of people employed, the amount of business done—in units of product or dollars—or on the basis of their different ratios of service to direct labor? There are many things that have to be analyzed quantitatively before we can arrive at an intelligent answer as to what type and size of organization are necessary to accomplish a given result.

I am very much in favor of the flexible budget, a form of which I have used. The first thing necessary is a picture of the industry. In order to get this I use a chart which shows the economic characteristics of the business and enables me to get variations in cost and profit with different volumes of production and sales. From this I am able to set up the budget items which should appear at different volumes of sales.

I think, also, that the idea that the engineer and the accountant both have a function to perform should be emphasized. It should be the function of the engineer to determine what is worth accounting for, what are the prime variables. It should be the accountant's job to set up the mechanism by which these things may be observed.

John M. Carmody.[*] I should like merely to emphasize the importance of the psychological factor, which Mr. Coonley so ably discussed in his paper, and to illustrate by some examples from my own experience Mr. Williams' point on the importance of accounting in developing initiative. I once spent a brief time with a group of retail stores in order to get a picture of that particular phase of business activity. There were twelve or thirteen stores in the group. Each store had its various departments, each one representing specific responsibilities of persons. The books were so kept that every single executive in every store got a weekly report on the results accomplished by every other executive responsible for a similar activity. What was the result? In a great many cases these men and women had had no accounting training, but this method of control made business men and women of them overnight. They learned not only to compare their results with those of others with similar responsibilities but to go to the controller to find out where they had fallen down in their efforts to be as good as the best. You can have no idea of the inspiration given to individuals by this method. It also developed close personal ties by strata. The buyer of leather goods in Detroit was tremendously interested in the buyer from Boston, and so on. Because they were in different cities they were non-competitive.

---

[*] Editor, *Factory and Industrial Management*, McGraw-Hill Publishing Co., Chicago, Ill.

I have worked with budgets for some twelve or thirteen years in three separate industries—the garment industry, coal in West Virginia and now the publishing industry. We publish about thirty journals, each in many respects a separate business. Each is managed by a group of men—a business manager, a circulation manager and an editor. Each of these men is responsible for his own budget, which is a part of the budget for the paper, which is in turn a part of the budget for the organization. When these are finally approved by the budget committee each unit knows what its job is for the year and feels a sense of responsibility for an individual business. So long as he does not exceed his budget each man has little interference from the top. In fact those at the top are glad to be free of the responsibility of doing more than coordinating the various activities. This was one of the things that inspired me about this particular business, about which I knew nothing when I went in but to which I was able to adjust myself very quickly because of the fact that it was operated on principles with which I was familiar.

A. B. Rich.[7] I should like to ask for a little more light on Mr. Coonley's statement that personality may become less of a factor in business as time goes on. Certainly the psychology of management is the biggest factor entering into any of the problems that have been discussed this morning. Even the economists are putting their problems up to the psychologists. And my experience, even though with only one concern and that a fairly small one, has been that this question of desirable size is almost entirely dependent on psychological factors. It depends on your ability to get together the group of men who are able to handle the functions of your business and to work together effectively.

William H. Leffingwell.[8] It seemed to me that Mr. Williams gave us both a "yes" and a "no" answer. There are circumstances under which the answer is positive for large companies, and others when it is not. I believe that the question of size is almost entirely one of human equations. If you have the right kind of management you can grow to a very large size. We have two outstanding examples of this in the American Telephone and Telegraph Company and the Western Electric Company. On the other hand, I know of another company of about 18,000 employes that I think has reached the limit as to size. This is not because larger companies cannot be organized in that line but because this particular company has used research analysis in certain lines and entirely ignored it in others.

We have to consider another thing, and that is, that a large majority of existing companies either knows nothing of or pays no attention to the things that we, the Taylor Society of management pioneers, are saying about how to manage. This is not necessarily a cause for discouragement, however. We find as we look back over the history of industrial development for the past ten years that progress is being made in the use of the techniques of analysis and research in almost every branch of business. The attitude of today, therefore, may not be the attitude of tomorrow or ten years from today.

L. Herbert Ballou.[9] I quite agree with the last speaker that human capacities and managerial abilities are the all-important things in determining to what size an organization can grow. During the past year we have seen repeated instances of large industrial mergers. How far can this go? There seem to be two aspects to the problem—one the human and the other the financial.

Consolidations of banks with a resulting concentration of money power have been going on also. Proposed legislation may be the limiting factor in this development. I have always had confidence that the limitations of management would act as a safeguard against industrial consolidations going beyond a certain size. I think there is more cause to worry in the case of banking mergers.

I can heartily support Mr. Williams' accounting theory. I consider it one of the most important factors in the situation. Clean-cut accounting is essential to sound administration and to the stimulation of an organization. A sound and suitably developed accounting procedure is a prime necessity in the accomplishment of the result.

---

[7] Dennison Manufacturing Company, Framingham, Mass.

[8] W. H. Leffingwell, Inc., New York.

[9] Vice President, The Kendall Company, Boston, Mass.

Moritz A. Dittmar.[10] Coming over on the train from New Jersey this morning I had some fun trying to anticipate Mr. Williams' answer to the question, "What is the optimum size of organization?" In doing this I reviewed the history of business organization from medieval times, when business was largely in the hands of individuals, down to the present time when we find the efforts of many human beings concentrated in one organization, the latter quite often the result of large vertical and horizontal combinations. It seems obvious to me that you cannot determine the optimum size of organization, because in order even to define the term it is necessary to assume that business organization is in a static state. It is not, of course, static but in a continuous state of flux and development, as Mr. Williams brought out in his introduction. Perhaps we can arrive at a relatively optimum size of organization for a given period, however, and the techniques of budgetary control, distribution of authority and accounting systems are fundamental factors in determining this. I agree whole-heartedly with the philosophy of Mr. Williams' paper.

Harry Arthur Hopf.[11] I must confess to a deep and lasting interest in the question of optimum size of a business organization, and I find it difficult to understand how there can be any difference of opinion regarding it. Possibly the divergent views which have been brought to expression at this meeting have been inspired by the phraseology employed in setting forth the topic for discussion: "Is there an optimum size of organization?" The word "optimum" means most effective; that is, the condition producing the most effective results. To query whether such a condition exists is, as I see it, to question that there is an art or science of management. If we grant that management can have any influence over business results, is it not axiomatic that optimum conditions can be posited and that size, which is so easily subject to measurement, constitutes one such condition?

To give a negative answer to the query propounded as the subject of the paper under discussion is to state a management paradox. In support of this assertion, we have only to recall the fact that a law of diminishing returns is operative in business and that the force of this law begins to manifest itself when such factors as size of organization are found to exceed the optimum. When we ask whether there is an optimum size of organization, we are, accordingly, raising a question which answers itself.

Assuming that the foregoing reasoning is correct, it may be appropriate to address ourselves briefly to a consideration of what I surmise to be the real purport of the topic for discussion; namely, "What is the optimum size of organization?" or, more constructively, "How can the optimum size of organization be ascertained?"

Without any further preliminaries, may I at once advert to the present status of business organization and ascribe to it the outstanding characteristic of enormous size? May I, furthermore, point out that this very condition has of late been accentuated by the rapidly accelerating rate at which mergers of important business institutions, and even of entire industries, have taken place? As a student of organization, I have come to view this tendency with concern and, in common with others, to deplore the fact that so many of our financial, industrial and commercial institutions have been led to engage in a mad race for size, often without proper regard for the objectives of service and profit. Whatever the underlying causes of this phenomenon may be, it must be admitted that in point of fact, as well as in the eyes of the world at large, the American business scene is dominated by worship at the shrine of size.

In human terms, the situation is one of grave import, fraught with possibly dangerous consequences to business executives as a group. We must recognize that, generally speaking, the rate of progress among members of this group is relatively slow; often they reach positions at the apex of the organization pyramid only to find that when they are at last able actually to influence major trends and to keep them under effective control, the end of their productive life is rapidly approaching. Science has as yet discovered no way of staving off the physical degeneration of the human machine, and it is one of the tragedies accompanying human effort in business that increasing burdens and strains are a concomitant of the rise to positions of the highest importance. Thus, at a time when the intellect still shines brightly and ability, reinforced by experience, is at its apogee, nature only too often exacts its inexorable penalty in the form of physical collapse. In support of the picture which I have drawn, I need only make reference to published statistics[12] indicating, in recent years, an increase in the rate of death from heart disease among middle-aged business men, a fact for which, in the judgment of competent authorities, the conditions pointed out above are largely responsible.

---

[10] Lehn & Fink, Inc., Bloomfield, N. J.

[11] Senior Member, H. A. Hopf and Company, Management Engineers, New York.

To determine optimum size of organization and keep it under effective control, it seems to me that we must first of all recognize the human implications of management and concede that its limits are clearly defined by the capacity of the executives. We may, furthermore, postulate that wherever the effects of size are such as to place the deciding power remote from the point of action and to stifle initiative because chief executives do not render prompt decisions, optimum size has been exceeded. Finally, we must not lose sight of the fact that for every organization which exceeds optimum size, there are many which never achieve that goal. Faulty planning, limited capital, restricted experience, inferiority of product, incompetence of management, unfavorable economic factors and a multiplicity of other reasons which need not be specified, in all too many instances create effective barriers to even an approach toward optimum size. Such organizations are usually engaged in a desperate struggle to survive and, where disaster does not finally overtake them, they find more often than not that the energies of their executives are frittered away in the up-hill task of maintaining affairs on a level which is barely above the "break-even" point.

As an approach to the formulation of a technique for determining optimum size, I venture to offer the following suggestions:

1. Establish the objectives of the business in functional terms.
2. Define those general policies which should be followed regardless of operating conditions or results.
3. Define the task of management in human terms.
4. Staff the executive group with members who are competent to perform successfully the tasks assigned to them.
5. Furnish the executive group with standards of accomplishment by which performance can be accurately measured.
6. Study operating results and establish trends of accomplishment.
7. Adjust the rate of replacement of members of the executive group in line with requirements for maintaining the standards set.
8. Consider particularly the factor of age in its relation to productive capacity of executives.
9. Analyze all dynamic elements so as to discern the possible operation of the law of diminishing returns with respect to any element, substituting measurement for judgment, wherever possible.
10. Establish the optimum size of organization at that level at which the most favorable operating results can be secured, within the limits of the predetermined objectives and policies and without causing an executive overload at any point of the organization.

In the last analysis, the problem of establishing an optimum size of organization resolves itself into the ascertainment of that particular level of effectiveness on which all the vital factors are so perfectly balanced and executive talent and capacity are so purposefully and successfully employed, that maximum service and profit possibilities are regularly realized. The fact that such a goal is difficult of attainment is no reason for not recognizing its existence and, at least, striving to approach it as closely as possible.

Henry P. Dutton.[13] I want to bring out just one point which should supplement what Mr. Hopf has said. There is, in my opinion, definitely an optimum size for an organization. I think I would be inclined to reverse Mr. Williams' points. He says that theoretically there is no optimum size for an organization but that practically there is an optimum. I would say that theoretically there is an optimum size, if you arrive at the proper units or functions, but that practically you can only obtain that size by a process of trial and error, of successive approximations.

---

[12] "A World's War Against Disease," Address by John K. Gore before Twenty-first Annual Convention of The Association of Life Insurance Presidents, held at Hotel Astor, New York, December 8-9, 1927. See Proceedings, pages 101 to 157, inclusive.

"Pushing Back the Death Line," Address by Harry W. Cook, M.D., before Twenty-third Annual Convention of The Association of Life Insurance Presidents, held at Hotel Astor, New York, December 12-13, 1929. See Proceedings, pages 91 to 111, inclusive.

[13] Professor, Factory Management, Northwestern University, Chicago, Ill.

I have always found that the optimum size problem is clarified if we consider the functions separately. There is very little question, for example, about the proper operating size of a unit to assemble an automobile or similar object. The quantity to be produced can be figured and a balanced unit worked out. That unit, for a simple product, might conceivably be a half dozen machines. That unit would not, however, be balanced from the standpoint of supervision. It would therefore be necessary to work out a combination of small machine groups that would make up a balanced unit from that standpoint. This same process can be carried through the whole organization. The units economical for the performance of the function get larger as we get into the fields of distribution and finance. There is probably hardly a limit to the size of organization that can be brought together to produce a balanced unit from the standpoint of financial and general executive control.

There are other reasons for large organizations. The large unit possesses fighting strength and permits the more effective use of reserves. Consolidations often result from a desire on the part of the members to submit each other to restraints on conflicting interests and activities, akin to the restraints of political government.

On the other hand, as the size of the organization increases, the functional losses involved in transporting materials and communicating ideas between the parts of the organization, become very great. The existence of these losses indicates that an organization should be kept as small as is consistent with balanced and economical performance.

Disruptive forces tend also to accumulate because of organization strains on individual purposes.

There is also, as many others have said, a very definite optimum limit to the number of matters which an individual can handle. It seems to me that our units are set at that point and that our progress must be along the lines of more effective group control. Something like the dominion plan of Great Britain is being used by our large corporations.

Gorton James.[14] I want to put just two thoughts before the group. We have been talking about scientific measures of control making possible growth in the size of organizations. The most important measure of optimum size, which has only been suggested so far, is profits. I remember being greatly impressed a number of years ago when A. T. Simmons pointed to the banana stand as the organization giving the greatest return for the amount of money invested. He attempted to organize his business on the general idea that the small unit had the opportunity of control which made for the greatest profit-getting business. Personality has been spoken of as limiting size. This is true but it is not the only limiting factor. The other is the possibility of profits. I am thinking of a hardware wholesaler that we studied in Washington. He was a capable business man but he was extending his business to the point where he was getting less return for the amount of money invested than he had been getting with less business. When he came to set up measures by which he could for the first time find out the cost of his individual operations, he discovered that about one-third of the territory he was trying to cover was costing him more than the return from sales. By withdrawing his efforts from that territory he made a higher percentage of profit, and in fact, more actual profit. There is a definite limit to size quite apart from personalities.

I want to mention also the social aspects of the question, which have not been touched upon. The bigger the enterprise, the bigger the problems, and the net result in the case of ordinary men is to make them more and more careful and conservative. It is a question as to whether it is not necessary from the social standpoint to have the smaller concerns as well as the larger, if we want to maintain our present rate of progress. So much attention is being given to the advantages and efficiencies to be derived from size with control that we are losing sight of the importance of the smaller organizations as producers of new ideas and inventions. As an illustration of what I mean let me cite a case: On the way over to this meeting I was discussing the management societies—the Taylor Society, the American Management Association, the Society of Industrial Engineers. My companion suggested that a combination of all three would be much more powerful and effective than the present situation. I questioned whether that is true. The main purpose of these societies is to generate ideas. If we had one group we would have only one group generating ideas, whereas the three different organizations have three times as much power to generate ideas. The same is true in business organizations. By having many units we have many people striving toward increased efficiency and the improvement of business methods. The chances are that from many such units, provided they are well organized, we shall have greater generation of ideas than if these units were all combined in one grand powerful organization.

---

[14] Editor, *Business Week*, McGraw-Hill Publishing Company, New York.

Henry P. Kendall.[15] I gather from some of the discussion of the morning that the word "optimum" has been confused with "maximum." If I remember my Latin correctly it has reference to the best rather than the biggest. In our company we are not thinking about size in terms of maximums. We are putting our efforts into determining the minimum size; that is, the minimum size of a department, a plant, or a group of plants at which a given result can be accomplished at lowest cost. When you are in the business of running cotton mills you have to ask whether a 15-, 30-, 50-, 75-, or 150-thousand spindle mill is the minimum size that is going to be competitively successful.

When we have determined these minimum sizes we have the problem of developing markets to enable us to operate at these minimum sizes. When we have done this we do not worry about the fellow who has a business two or three times the size of ours.

It seems to me that this is the side of the question which closely relates itself to optimum.

H. S. Person.[16] I should like the privilege of focusing the points of discussion that have been made here this morning, because the value we get out of these meetings lies in what we think after we have left them.

It seems to me that there have been three main classes of thought expressed here. The first holds that the main problem is psychological; the second, that it can be solved through instruments of control, and the third, that it is a responsibility of management.

I agree with those who emphasize psychology. But if we resolve the psychological problem of size into one of the development of understanding throughout enterprise, then do not the various instruments of control help to resolve this problem of understanding, and is this not the responsibility of management? If we concede that there is no limit to the size of markets, then the problem of optimum size of organization is one of resolving the human and psychological elements through scientific instruments, developed by management itself.

That line of thought explains the set-up of the program this morning. These two subjects were put together because, before we can adequately discuss this problem of size, we must have some concept of the relative areas of the known and unknown, or the controllable and uncontrollable, resulting from the utilization of these instruments of measurement that we have been discussing this morning.

Closure

Joseph H. Barber. I shall carry back to Mr. Coonley, with considerable interest to him, I know, many of the points brought out in discussion this morning. He has a sense of humor and I know he will appreciate what Mr. Silcox said about our signing contracts as though things were controllable!

One point I do want to clear up. I am sure he did not mean to imply that we shall not need personality in the leadership of the future. He meant to say that we shall need a different kind of personality. The old type of executive, and to a large extent the present type, thinks of himself as reaching out into the air for a decision. His job is to make decisions. Mr. Coonley believes that in the future the executive's job will be to make analyses. Decisions will almost take care of themselves.

John H. Williams. Much has been said this morning of the psychological aspects of these problems. I was reminded, as I listened, of a case I once handled. The people who consulted me evidently thought I should have an opinion to hand them immediately. I said to them, in substance:

"You gentlemen are the principal people in this business now; you are dominating it. Do you want to continue to dominate it or do you want to make the business the thing? Which is the real objective, you yourselves or the business?"

That sums up a lot of this psychological business.

---

[15] President, The Kendall Company, Boston, Mass.
[16] Managing Director, Taylor Society, New York.

Distribution Costs[1]

What Should Be the Character of an Adequate Distribution Cost System?

By **NORRIS M. PERRIS**

Stevenson, Harrison and Jordan, New York

LET US review the definition of cost accounting given in the Taylor Society's latest book, *Scientific Management in American Industry*. "Cost Accounting *serves management by evaluating the losses in expected profits* when *management standards* are not attained, or the *gain in profits when organization ability is effective in raising management standards*. It points out the sources of these gains or losses promptly."

Taking this definition as a basis for this afternoon's discussion, we have two channels to pursue: One is a discussion of the routines of cost accounting; the other is a discussion of the reasons for such routines, with special emphasis on fixing responsibility.

When Dr. Person sent me the subject for today's discussion, the thought occurred to me, as probably it occurred to you, that this was an occasion for describing some method of analyzing the various selling expenses by lines of product and by mediums of distribution.

It is a great temptation in appearing before a group of the Taylor Society to go through what I believe is the burdensome detail of illustrating some one method. I believe we would obtain better results by guarding against such a temptation and making such analyses and illustrations of cost accounting methods secondary. I have tried to discuss the reasons for requiring such an accounting procedure, with the benefits accruing therefrom, rather than to spend considerable time on the details of any one method.

I shall later show some exhibits which illustrate the work that has been done in this field of distribution costs, so that we may see why such exhibits are in use and particularly how they are used by the line officers of an organization.

If we are to have an adequate discussion of the reasons for analyzing distribution costs, we should first ask ourselves who is responsible for distribution and how he may control his daily actions so as to distribute the product economically. In other words: What is the sales manager's job? What are his responsibilities? How will he attain these responsibilities? What types of information must he have before him to aid him in attaining these responsibilities? Let us discuss the sales manager's position in a general way.

First of all, he selects the proper distribution medium or a combination of possible distribution mediums. The latter is more nearly the true solution of his problem. He distributes through: (1) agents; (2) company salesmen directly under his control; (3) retail stores, or the usual distribution scheme of wholesaler, jobber and retailer; (4) direct mail to customers; (5) a combination of all these methods. In order to select the proper method of distributing goods, his records must be in shape to show him which combination is most useful for the type of product he sells in the various localities in the country.

After having selected the type of distribution he intends to follow he has two major factors in management which he must constantly control. One is the pricing of his product, and the second is the control of his salesmen and sales department. In this day of declining prices and enormous discounts given on purchases in volume, the sales manager must know the cost rates for various volumes. He must also know the trend of the market for his various products. He will probably find that certain products are in favor even at slightly advancing prices, while other products are meeting with severe competition. He might even find himself thrust out of the market on certain of his products due to better values being given by competitors.

These facts can be summed up in a definite policy concerning the type of business the company should go after. Recently the major executives of a concern we were working for were deadlocked on the type of business they should go after. The sales manager was convinced that if he could take some business below cost he could greatly increase the volume and thereby the net profits of the company. The general manager was of the opinion that the profits lay in specialties, and that there was no object in going after this big-volume production and selling below costs. The analysis, which we will go into later, convinced us that the general manager was right and the sales manager wrong. However, without this analysis it would never have been possible to win over the sales manager to a program of specialties. Seeing is believing in this day and age and no amount of talking is going to convince a man of long experience that his own ideas are incorrect. We must prove them by facts based on figures.

---

[1] Paper presented before a meeting of the Taylor Society, New York, December 5, 1929.

The sales manager's second responsibility is the control of salesmen. He has to place men in the various territories to fit the type of purchasing power they are to meet. There is no object in putting a high-priced salesman in a field which does not lend itself to that type of man. Conversely, it would be very poor economy to put a low-priced salesman to call on large accounts. The men must be placed where they fit best.

The sales manager must also control his salesmen so that most of them are reasonable profit makers. Some salesmen are by nature profit makers. It hurts their vanity to have to take an order at or near costs. Other salesmen are just chronic price cutters. They peddle their business rather than sell it. They call on the trade to find out what the price is and then insist on going below it.

Another factor is that some salesmen are natural business men while others are spendthrifts. Some spend very little to obtain business while others spend a great deal to obtain business which cannot support such expenditures. This matter of sales expense has always been of great interest to us. The big salesmen—the big profit makers, real go-getters—do not buy business through extravagent entertaining, but actually sell the service and the product, making the purchaser feel that the salesman is doing him a favor in selling him the merchandise.

The essence of success in any undertaking is the understanding of the other man's viewpoint. Therefore, before we definitely discuss routines for controlling sales and selling expense, and thus fix responsibility for distribution costs, we may first sum up the sales manager's problem as follows:

1. He must distribute goods through the various channels of trade economically.
2. Having selected the various mediums economically, he must so price his products that he is within the market and at the same time produce satisfactory profits for his company. Briefly, he must select the best business, for the type of company he represents, financially and otherwise.
3. He must select, place and control his subordinates or salesmen so as to accomplish the above two objectives, for after all they are his representatives and he rises or falls with their success. They will be successful only if intelligently directed.

He attains these objectives through forecasts and controls. These are commonly spoken of as budgets and costs. The form these budgets and costs are to take depends entirely on the multitude of factors previously mentioned. Naturally the sales department which sells through a few national jobbers does not need the detailed records and reports that one selling direct to its own representatives all over the world requires.

Our first principle should be to budget expenses for each method of distribution. If we sell entirely through agents and jobbers, a budget of the business as a whole as to sales, profits and expense, would be entirely adequate. If we sell direct to consumers, greater detail is necessary, as will be shown subsequently.

All distribution costs have to be allocated to lines of major product. The usual divisions for these major lines of product are the various classes of trade. This is based on the premise that various classes of trade classify and group the varying conditions which a selling department has to meet. As an illustration, one of our clients selling chains had four thousand different varieties of chains. These were grouped down to seven or eight classifications. You could not expect to control selling expense by applying the same selling percentage to sales for jewelers' chains as you would to supplying chains for bridges. Similarly, you could not apply the same selling percentages to chains that were sold to agents on the Pacific Coast, and in foreign countries, as you could to chains that were sold direct to manufacturers for re-use in their products.

The principle of making up such a distribution of selling cost between various lines, classes of trade, etc., is the same principle you use in manufacturing costs. In a manufacturing department you visualize where every expense goes and distribute it accordingly to the machine and product causing that expense, in other words, to the products receiving the benefit of that expense. The same is done in selling. We take the advertising appropriation and analyze it as to the medium of advertising. This at once breaks the appropriation down into the general class of trade expected to be reached through this medium of advertising. Should we do any newspaper or other advertising of a local nature, it is not distributed on the general advertising fund but charged directly to that district's selling expense.

Salesmen's expenses are distributed on a time basis. We realize that this is inadequate but if you take the matter up with the individual salesmen in the proper way, you will find that they can pretty well approximate how much time they will spend on the various classes of trade. This can be checked back through their sales to each classification, and if any salesman has slipped up in his estimate of time spent, a further review with him will usually bring about a correction.

Briefly, we go on to each item of expense in this manner. The detailed expenses are analyzed as being dependent on some major factor, such as salesmen's time, or volume of sales expressed in dollars, or in quantity, or number of orders, etc. The detailed item of expense is then distributed to the products in relation to one of the factors just mentioned. In this way we obtain selling-expense distribution to each major line of goods.

I have tried to explain by principle only, in a very few minutes, what usually takes a month to work out. A great deal of benefit is derived from sitting down with the sales manager and salesmen and discussing certain points that come up in this analysis. It opens their eyes to the benefits of a proper cost control.

By this time we have distribution costs segregated by classes of product and by district offices and territories. We are now in a position to discuss this analysis in the light of the two major purposes of cost accounting: (1) control of the sales department and (2) control of prices and markets.

The proper control of salesmen should start with a quota budget for each salesman. Each salesman or territory has a quota of sales based on a forecast of economic conditions within that particular territory. Briefly, this forecast is based on one of the forecasts of the better known financial services and no attempt is made to make an independent analysis for the company.

After having selected these quotas, which are in dollars and not in quantity of goods, we obtain an average manufacturing cost based on the quota for each one of the general lines. No attempt is made to obtain the cost under the budget by extending each type, size, etc., of the product with its respective cost price. An average is used because what we want to know after all is whether a salesman is improving on his past average performance. As an illustration, if in the fancy grocery line, the manufacturing cost of a salesman in the past had been 30 per cent of the dollar of sales, we would set up a manufacturing cost on the 30 per cent basis as far as the salesman was concerned. Added to this cost in detail are the direct selling expenses of the salesman—traveling, entertaining, automobile, salary, commission, etc.

From the above we can obtain the expected profit that each salesman should show in each major line. Incidentally, the salesman is paid a bonus on this basis. If he increases his profits he is paid a bonus; if he decreases them then he is merely paid his salary. This makes the budget a live part of the daily routine and it is constantly in the salesman's mind when he is dealing with a customer. This is what we mean by the "inspirational effect" that such reports and records have in obtaining greater profits for the company. Likewise these forecasts could not be inspirational if they were blind guesses. Quotas must be obtainable. A review of this forecast followed by a personal visit of the sales manager to the salesman's territory is bound to have a good effect upon him.

To set up this forecast is only one quarter of the task. The cost records, or profit and loss by salesmen (Figure 1), must be checked back monthly with the budget. Without this check up, the budget is useless, because the salesman's interest must be maintained. In this particular case each salesman meets with the sales manager in his district every Saturday morning to go over the gross sales to date. They meet once a month to go over the net profits obtained. Likewise the district managers confer with the general sales manager quarterly on the results obtained in their territories as a whole.

NEW YORK SALES & COST OF SALES - FEBRUARY 1929

No.	Sales	Returns Freight & P P	%	Net Sales	Fac.Cost Amount	%	Gross Profit	%	Salesmen Salaries Expenses	%	P & L Above Direct Cost	%	Indirect Sales & Ord.Cost	%	Net Profit on Sales	%
0	11,394.93	455.74	4.0	10,939.19	8,357.79	73.4	2,581.40	22.6	571.10	7.5B	2,010.30 2,581.40	17.6 22.7	1,287.53	11.3	722.77 1,293.87	6.3 11.3
1	7,109.81	308.52	4.3	6,801.29	5,007.74	70.5	1,793.55	25.2	533.23 606.48	7.5B 8.5	1,260.32 1,187.07	17.7 16.7	1,582.21	22.3	-321.89 -395.14	4.5 5.6
2	10,095.62	130.72	1.3	9,964.90	7,044.21	69.8	2,920.69	28.9	757.09 678.33	7.5B 6.7	2,163.60 2,242.36	21.4 22.2	1,440.92	14.3	722.68 801.44	7.2 7.9
3	9,641.94	201.19	2.1	9,440.75	6,532.96	67.8	2,907.79	30.1	722.73 696.48	7.5B 7.2	2,185.06 2,211.31	22.6 22.9	1,333.31	13.8	851.75 878.00	8.8 9.1
4	1,674.52	23.33	1.4	1,651.19	1,106.95	66.1	544.24	32.5	125.25 343.75	7.5B 20.5	418.99 200.49	25.0 12.0	392.30	23.4	26.69 -191.81	1.6 11.4
5	1,206.39	2.92	.3	1,203.47	805.98	66.8	397.49	32.9	90.42 371.30	7.5B 30.8	307.07 26.19	25.4 2.1	193.53	16.0	113.54 -167.34	9.4 13.9
6	4,712.43	8.06	.2	4,704.37	3,629.85	77.0	1,074.52	22.8	353.01 217.50	7.5B 4.6	721.51 857.02	15.3 18.2	614.35	13.0	107.16 242.67	2.3 5.2
7	2,250.25	14.44	.6	2,235.81	1,584.50	70.4	651.31	29.0	168.75 375.35	7.5B 16.7	482.56 275.96	21.5 12.3	420.66	18.7	61.90 -144.70	2.8 6.4
8	6,102.12	124.36	2.0	5,977.76	3,802.87	62.3	2,174.89	35.7	396.62 785.59	7.5B 9.6	1,778.27 1,389.30	29.2 22.8	967.02	19.1	811.25 422.28	13.3 6.9
	54,188.01	1,269.28	2.3	52,918.73	37,872.85	69.9	15,045.88	27.8	3,718.20 4,074.78	7.5B 7.2	11,327.68 10,971.10	20.9 20.3	8,231.83	15.6	3,095.85 2,739.27	5.7 5.1

Figure 1

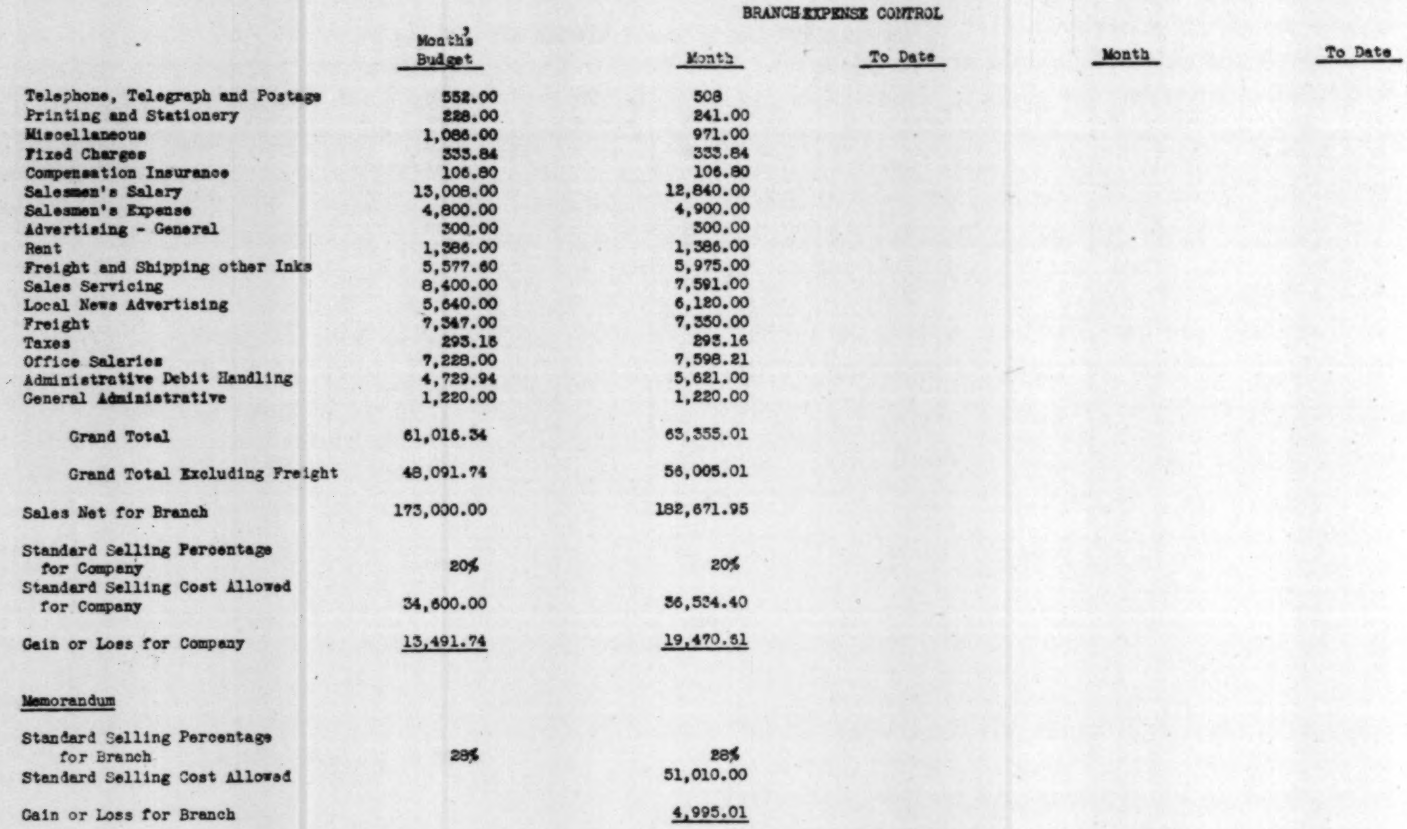
A similar report is made up by classes of customers. (Figure 2). This is a further check on the method of distributing the product. We feel that if we control: (1) the details affecting the salesmen, and (2) the details affecting the customer, we have the answer to the question of what is adequate accounting for distribution costs.

There is still one more analysis that is frequently made. We usually show on the cost records how much each territory is gaining or losing over the average for the company. As an illustration (Figure 3) we are showing the sales budget of still another company. We all know that if the average for selling expense is 40 per cent, that one territory is probably working on a 25 per cent basis, while another must be working on a 60 per cent basis, the weighted average being around 40 per cent. We know before we start that certain territories are losing money but we sell in these territories with our eyes open. We know we are losing so many dollars a month but we make this up on manufacturing overhead. If we do not make it up on manufacturing overhead we do it in order to get national distribution and profits in the future. For example, everyone knows that the states of North and South Dakota are poor fields for a great many products. Yet some of our clients have had men in that territory who for over ten years have just barely made their salary and expenses. How-

PROFITS BY CLASS OF CUSTOMERS (N.Y.)
February 1929

Class		No. Orders	Pounds	Sales Value	Cost	Profit or Loss	%
			I - Groceries - Independent				
$100	1	880	7,388	8,720.29	8,701.95	18.34	.003
$500	2	369	10,199	7,245.74	6,827.90	417.84	5.8
$1000	3	20	1,005	1,094.45	944.32	150.13	13.7
Over $1000	4	26	7,028	2,262.13	2,919.45	342.68	10.5
		965	25,620	17,322.61	16,393.62	928.99	5.4
			II - Delicatessen				
	1	2	74	32.47	32.27	.20	.006
	2	7	509	353.58	303.10	50.48	14.3
	3	17	5,777	3,057.60	2,756.76	300.84	9.8
	4	16	11,671	3,727.96	3,526.03	201.93	5.4
		42	17,831	7,171.61	6,618.16	553.45	7.7
			III - Miscellaneous				
	1	9	163	168.65	155.18	13.47	8.0
	2	39	3,214	1,645.38	1,404.53	240.85	14.6
	3	6	957	730.59	651.20	79.39	10.9
	4	12	10,038	4,269.02	3,865.54	403.48	9.5
		66	14,372	6,813.64	6,076.45	737.19	8.2
			IV - Grocers Chain - Local				
	1	4	24	15.15	35.56	20.41	134.7
	2	49	2,528	1,626.43	1,516.18	110.25	6.8
	3	39	4,256	2,386.38	2,162.01	224.37	9.4
	4	69	42,915	15,339.86	14,119.47	1,220.39	8.0
		161	49,723	19,367.82	17,833.22	1,534.60	7.9
			V - Combination Chain - National				
	2	20	828	429.74	451.91	22.17	5.2
	3	9	120	124.00	123.12	.88	.71
	4	27	2,536	1,417.65	1,262.06	155.59	11.0
		56	3,484	1,971.39	1,837.09	134.30	6.8
			VI - Agents				
		1	50	37.50	31.71	5.79	5.4
		44	1,251	791.82	735.67	56.15	7.1
		1	5	4.95	5.97	1.02	20.6
		1	1,486	292.92	271.29	21.63	7.4
		47	2,792	1,127.19	1,044.64	82.55	7.3

Figure 2



BRANCH EXPENSE CONTROL

	Month's Budget	Month	To Date	Month	To Date
Telephone, Telegraph and Postage	552.00	508			
Printing and Stationery	228.00	241.00			
Miscellaneous	1,086.00	971.00			
Fixed Charges	333.84	333.84			
Compensation Insurance	106.80	106.80			
Salesmen's Salary	13,008.00	12,840.00			
Salesmen's Expense	4,800.00	4,900.00			
Advertising - General	300.00	300.00			
Rent	1,386.00	1,386.00			
Freight and Shipping other Inks	5,577.60	5,975.00			
Sales Servicing	8,400.00	7,591.00			
Local News Advertising	5,640.00	6,120.00			
Freight	7,347.00	7,350.00			
Taxes	293.16	293.16			
Office Salaries	7,228.00	7,598.21			
Administrative Debit Handling	4,729.94	5,621.00			
General Administrative	1,220.00	1,220.00			
Grand Total	61,016.34	63,355.01			
Grand Total Excluding Freight	48,091.74	56,005.01			
Sales Net for Branch	173,000.00	182,671.95			
Standard Selling Percentage for Company	20%	20%			
Standard Selling Cost Allowed for Company	34,600.00	36,534.40			
Gain or Loss for Company	13,491.74	19,470.61			
Memorandum					
Standard Selling Percentage for Branch	28%	28%			
Standard Selling Cost Allowed		51,010.00			
Gain or Loss for Branch		4,995.01			

Figure 3

ever, the policy is found to be sound because sales and profits are on the increase, and the company has to make a start some time.

Our object in budgeting one territory against another is to show improvement. We budget the loss, which seems ironical, but this is just what we do. We expect to lose money in this territory. What we want to do is not to lose any more than is necessary, and what we strive for is a decrease in loss. Through the budget and distribution cost check-up the sales manager in that district is informed of results obtained against his past performance, rather than told bluntly that he has again lost money for the company as noted on the territorial analysis sheet.

In this paper we have tried to show that the only way to follow the costs in the sales department is to control the initial sources of sales. You must control the district salesman and you must control his relations with the customer. Unless you get down to the control of these individuals you cannot expect to have a distribution system that is economically sound and suited to your territories. By such a check-up of individual performance in each locality with the results obtained, the sales manager has his finger on the pulse of the situation.

Our economic situation is constantly changing and management must bear this in mind. The setting up of standards, forecasts, budgets, or whatever name is applied to them, acts only as a guide and gauge for improvement. From them we discover facts to guide us toward that improvement and make us keener in our judgments and daily decisions.

We have disposed of the first purpose of cost accounting, i.e., control of individuals functioning as mediums of distribution. We now pass abruptly to the second phase, i.e., cost accounting as a means of price control.

An important subject which comes up daily in any sales department will serve to illustrate this phase. If we cannot obtain volume business on a "cost plus profit" basis, at what price can we take it on without going into bankruptcy? In other words, at what price can we take volume orders? We need them to keep the plant going. At what

MIEHLE PRESSES

Elements	Budget Year 60% capacity 1929	Actual Eight Months	Average Per Month Actual	Budget 66% capacity	Budget 70% Capacity	Budget 80% Capacity	Budget 85% Capacity
Rent	2,317.20	1,544.80	193.10	184.92	185.55	186.15	186.45
Depreciation	3,036.00	2,024.00	253.00	253.00	253.00	253.00	253.00
Insurance	37.20	24.80	3.10	3.10	3.10	3.10	3.10
Power	1,165.01	683.22	85.40	89.22	90.65	92.25	93.68
Supplies	1,020.00	605.25	75.66	77.00	78.00	79.00	80.00
Repair Material	108.00	84.61	10.58	11.00	11.00	11.50	11.75
" Machine Shop	252.00	104.03	13.00	14.00	14.50	15.00	15.00
General Factory	9,164.76	6,247.92	780.99	787.58	841.38	866.80	872.14
Supervision	2,805.00	1,839.00	229.88	250.00	255.00	260.00	260.00
Liability Insurance	181.20	118.04	14.75	14.75	15.00	15.25	15.25
Total Expense	20,086.37	13,275.67	1,659.46	1,684.57	1,747.18	1,782.05	1,790.35
Labor	17,050.00	11,275.85	1,409.48	(1) 1,363.99	1,363.99	1,375.00	1,380.00
Total	37,136.37	24,551.52	3,068.94	3,048.56	3,111.17	3,157.05	3,170.35
Production	12,474,000	6,956,498	869,562	956,518	1,000,000	1,043,474	1,086,953
Cost per M Impressions	2.977		3.529	3.187	3.111	3.025	2.917
Labor	1.367		1.621	1.426	1.364	1.318	1.270
Expense	1.61		1.908	1.761	1.747	1.707	1.647
Total Hours		7,028	879	967	1,011	1,055	1,099
Expense Cost Per Hour			1.888	1.742	1.728	1.689	1.629
Standard Labor Cost Per Machine Hour	1.30						

(1) Bonus Performance at the present time indicates a 12% reduction in Labor Costs. This will undoubtedly go higher.

Standard Rates from Bonus

Figure 4

price can we meet the severe competition on these large orders?

Four different methods are resorted to in taking on volume business at or below cost, even by concerns which have very efficient cost systems. They are: (1) present cost; (2) present cost without selling and administration; (3) present cost of labor and materials without any factory, selling or administrative overhead; (4) true total costs at various percentages of capacity.

A number of concerns believe that volume business should be taken exactly at present cost. They feel that if they take this additional volume at this figure, they will net a profit at the end of the year through decreased overhead. The whole question is: Do they know what the profit would be at this reduced figure, and whether or not it is worth while assuming this added responsibility for so little money? Concerns that make present costs their final figure on volume business work on the assumption that they are not marginal producers. They assume that their present cost is the lowest cost any one in the industry might have and therefore that no one is liable to quote below that figure. This is not true, because your present cost may be well above average cost for the industry because of your position in that industry. Such factors as the size of your company in reference to the total sales of the industry, special advantages that you may have, etc., enter into this factor.

Those who will quote as low as present cost without selling and administration use the same logic as has been mentioned in the previous paragraph. They reason that there is no additional selling and administrative cost for this added volume. They, therefore, feel that they should be willing to take on such business for the factory overhead which is absorbed through greater volume.

Those concerns that are willing to take volume for labor and material alone usually reason that the overhead is there anyhow, and, therefore, that there is no additional expense. They feel that they should be willing to come down to this figure if necessary. The latter policy is plainly foolish and may even lead to bankruptcy. Suppose you should take on one of these big volume orders and the customer should reject some of the merchandise. The money that you would lose on this converted material might eliminate the profit on all the rest of the sales. We are, therefore, very strenuous in objecting to such a procedure. We feel that any company that must meet such situations in order to survive should drop that product and look for others, because sooner or later it will have to go out of business.

A sensible way to set prices is by the fourth method. (Figure 4). This method calls for obtaining the true cost at various volumes. Let us assume that we have an opportunity to bid on a quarter of a million of additional business which would increase our volume 20 per cent. The estimator takes these varying budgets and finds what the cost rates in the various departments will be at 20 per cent additional volume. He then figures the same as he would today, only substituting the different cost rates. In that way he obtains the true estimate of what the cost should be at those volumes. Therefore, any business taken at this cost is certainly not going to lead us into bankruptcy.

Before we leave this subject, it should be mentioned that a profit must be added to the cost at various volumes in setting final contract price. The same dangers as those previously mentioned, involved in taking on business below cost, are present here. Many a company has taken what it calls a volume account at what appears to be a great saving in overhead, only to find that the customer is such a nuisance and makes such unheard-of demands, that additional overhead must be employed merely to meet these demands. We, therefore, strongly urge anyone using varying budgets at different volumes to adopt a percentage of margin, or profit, above this cost in setting a minimum or base price. A sales department must not go below this figure except on the permission of the highest authority.

In explaining this subject of adequate accounting for distribution costs, we have refrained from giving you a definite system or method which would be a panacea for all distribution ills.

To repeat, we believe the only way to control distribution costs and sales prices is through control of the individuals who create that distribution cost and who finally set the price. This, as we have attempted to show, comes about by comparing salesman with salesman, customer with customer, on a profit and loss by classification basis. Our method is briefly one of interpolation. If we have three salesmen calling on about the same class of business, one at a selling expense of 10 per cent, another of 20 per cent and a third of 30 per cent, we have some facts about which to talk to the last two salesmen. If at the same time we have an average profit from each class of trade, and one salesman who is selling mostly to that class of trade does not contribute that average profit, we have another fact on which to base our discussion with him. All we do is to interpolate between these various sets of facts. In this manner we bring about a control and lowering of distribution costs along with a raising of profit margins that those in business may expect.

Spring Meeting of the Taylor Society

Columbus, O. — May 1 and 2

Tentative Plan

Thursday forenoon: *General Session.*
Theme: Setting the Task for the Business; general consideration of forecasting, market analysis, budgeting and analytic reports for chief executive.

Thursday afternoon: *Simultaneous Major Group Sessions.* (1) Sales Group: the major sales problems of 1930. (2) Productive Group: basic conditions of effective utilization of facilities.

Thursday evening: *Address*: Subject of general interest.

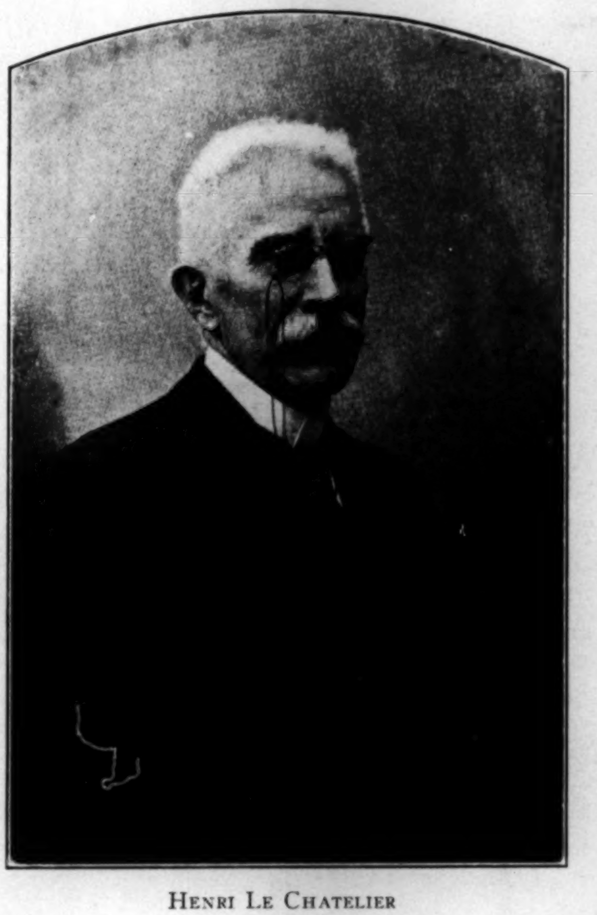
Friday forenoon: *Simultaneous Small Group Sessions*: (1) Time Study; (2) Managing Hand-to-Mouth Selling; (3) Functional Organization of Executive Responsibility.

Friday afternoon: *Simultaneous Small Group Sessions*: (1) Maintenance of Materials and Equipment Standards; (2) Developing New Items and Channels; (3) Measuring and Rating Management.

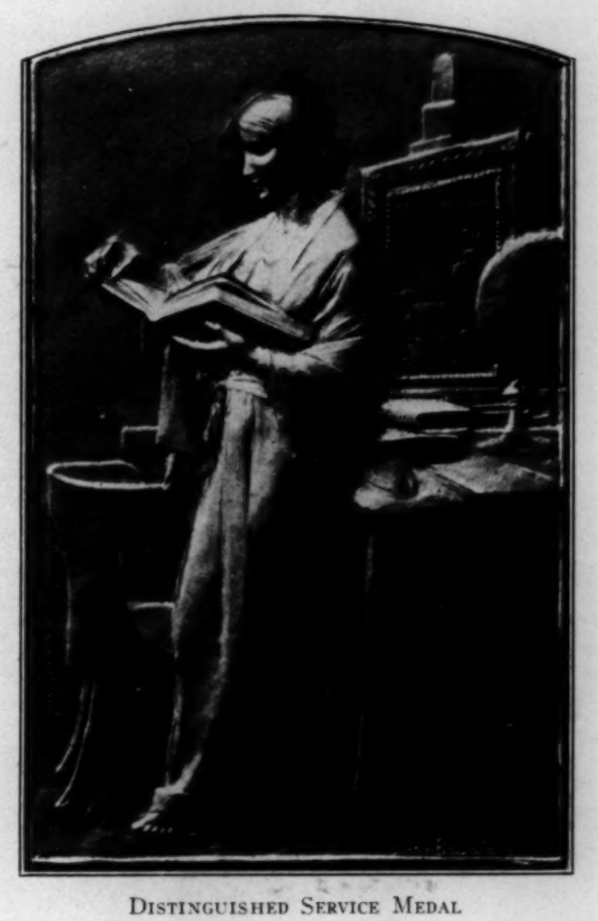
Friday evening: *Address*: Subject of general interest.

Fifth International Management Congress

Paris, June 19-23, 1929



Henri Le Chatelier



Distinguished Service Medal

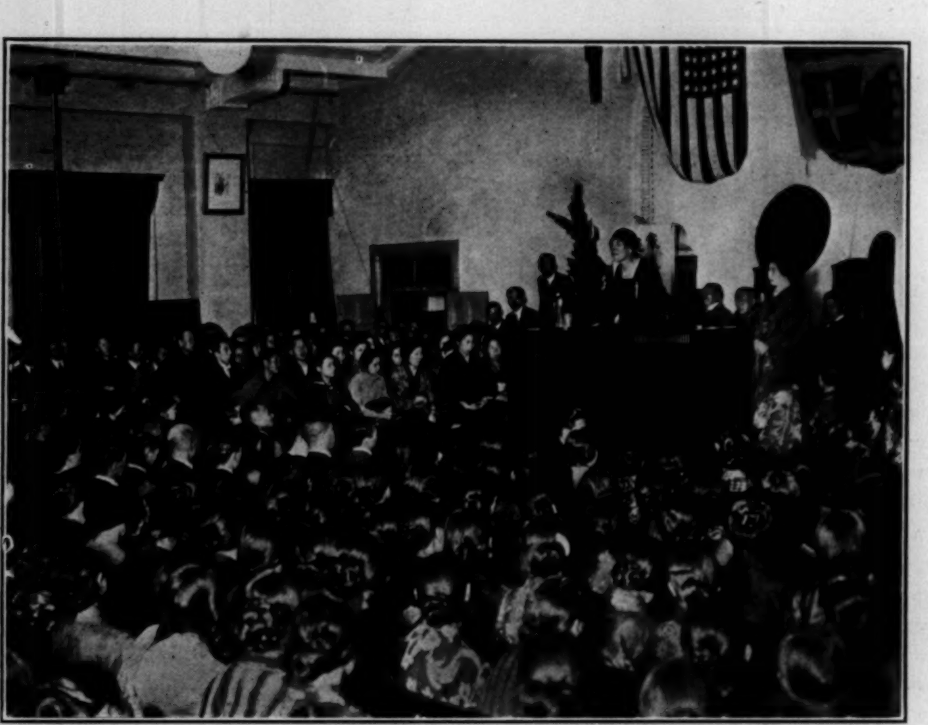
At the Fifth International Management Congress, held in Paris June 19 to 23, 1929, the International Committee on International Management Congresses made the first award of its medal for distinguished service in promoting the science of management. The recipient was Henri Le Chatelier, distinguished engineer, member of the Academy, professor of chemistry in the Sorbonne, recipient of the Bessemer Medal, honorary member of the Taylor Society, honorary member of the American Society of Mechanical Engineers, director of the *Revue de Métallurgie*.

Henri Le Chatelier introduced scientific management to Europe. At the Paris exposition of 1900 he was much impressed by the Taylor-White high-speed tools in the exhibit of the Bethlehem Steel Company. This interest led to contact with Taylor and scientific management, articles in the *Revue de Métallurgie*, and arrangements for the translation of the "Principles of Scientific Management," for which Le Chatelier wrote an important introduction.

World Engineering Congress

Tokyo, October 29-November 7, 1929

The presentation to the World Engineering Congress by the delegates of the Taylor Society (Wilfred Lewis, Chairman, John R. Freeman and Lillian M. Gilbreth) of a complete collection of Tabor Manufacturing Company scientific management mechanisms, which had been assembled by Mr. Lewis for that purpose. This is the last photograph of Mr. Lewis, who died at sea while returning to the United States. Left to right: *seated*—John R. Freeman, Baron Furuichi, Wilfred Lewis, Lillian M. Gilbreth; *standing*—Mr. T. Kurahashi, Baron Shiba, Calvin W. Rice.



A typical audience at one of Lillian M. Gilbreth's lectures in Japan following the Congress.

The World Engineering Congress in Tokyo[1]

As Seen Through American and Japanese Eyes

A Taylor Society Delegate's Report

By **LILLIAN M. GILBRETH**
Gilbreth, Inc., Montclair, N. J.

THE FIRST World Engineering Congress is difficult to evaluate even now that the whirl of technical sessions, excursions into a new country, social functions and contacts with old and new friends are past. I shall therefore be content to give you a brief story of the Congress, some further details on the management sessions, a few of my impressions of industrial Japan, and leave evaluation to you.

The Congress was from beginning to end a splendid example of a management job well done. A long period of planning preceded it. During this period men at the head of the profession in Japan visited this country to secure the suggestions and co-operation not only of President Hoover but of those in the rank and file of engineering. The same was done in other countries, with the result that a large attendance of distinguished engineers was secured as delegates, chairmen and writers of papers; a significant program was prepared; the details of procedure were efficiently worked out. The American delegates were made aware of the spirit of friendliness which was to pervade the Congress from the time they left their homes—at the send-off meeting in New York; in Washington, where the group was entertained by President Hoover and the Japanese Ambassador; in Chicago, Los Angeles and San Francisco, where the local engineers entertained us, and on the trip across the Pacific. The two boats, the "President Jackson" and the "Korea Maru" were provided with every facility for our instruction and pleasure. During our brief stay in Honolulu we were given every opportunity to observe the Hawaiian industries in operation, to enjoy the beautiful scenery of the Island, swimming at Waikiki, leis, music.

When the two ships docked almost simultaneously at Yokohama our Japanese hosts were at the gang planks to see that we were properly received and accommodated at hotels. We had a day for preparation and adjustment in which we were provided with badges, programs, passes, tickets and the most minute instructions. Everything was handled with the maximum of comfort and the minimum expenditure of time and effort. When you consider that the Pacific Relations group was meeting almost simultaneously in Kyoto, this was quite an achievement. When I asked how this result had been accomplished I was informed that those in charge had made every effort to find out what the foreign delegates would like and had planned accordingly. Where it had seemed that a Japanese custom would be most pleasing that was retained; or foreign ones were adopted where it seemed that they would be most acceptable. As a result Japanese who were used to European dress put on their Japanese costumes, wives and daughters entertained informally as well as officially. No evidences of courtesy and friendliness were omitted.

The President's reception on Monday evening gave us our first opportunity to meet the Japanese and European delegates and to get a feeling for the Congress as a whole. The difference in languages immediately became apparent as the outstanding difficulty which was to confront the Congress. Other differences between hosts and guests were insignificant as compared with the similarities of their aims, interests and experiences. Even this difficulty of language was minimized through the engineer's ability to express himself in sketches and formulae and through the efficient handling of translations. Material was presented in Japanese wherever possible, which insured more skillful presentations on the part of the Japanese, avoided translation of Japanese into English and enabled the large majority of Japanese attendants to get the maximum of educative value from the meetings. Translations were made only from English into Japanese. With one or two exceptions these were the only two languages used at the sessions.

The first regular meeting of the Congress was held on Tuesday morning, October 29, in the Municipal Auditorium at Park Hibiya, a huge modern building. One missed the historic setting which might have been possible but for Japan's tragic earthquake and fire, but there were evidences everywhere of the mingling of ancient and modern civilizations. Prince Chichibu, brother of the Emperor, and a patron of the Congress, took part in the opening ceremonies, as did the Prime Minister, an honorary president, and Baron Furuichi, the president. Dr. Sperry, representing the United States, opened the responses to these addresses and was followed by a representative of each of the European and Asiatic delegations.

---

[1] First World Engineering Congress, Tokyo, Japan, October 28 to November 7, 1929.

The Congress was on! At the business meeting, which followed immediately, chairmen were appointed and rules of order offered and accepted in a most expeditious manner. The World Power Congress opened in the same building in the afternoon and from then on the twelve sections of the Congress each met regularly every morning and, with two exceptions, afternoon. These two afternoons were reserved for garden parties and all of Thursday, November 7, was saved for closing ceremonies. Some of the most impressive occasions of the week included the conferring of honorary memberships by the different societies and the presentation of the Holly medal to Baron Shiba. The resolutions committee presented only three resolutions. One looked to a world engineering federation; one assigned the investigation of certain factors of irrigation, flood control and drainage problems to the Netherlands Royal Institute of Engineers, and the third assigned a special problem to the American Society of Civil Engineers. The closing ceremonies included summing-up speeches with responses by the foreign representatives. The feeling one carried away was one of friendliness and satisfaction, of desire to carry through suggested projects, to plan for future congresses and to make a contribution to international peace.

Nearby cities were visited during the week after the meetings, and in the ten days following—November 17 to 26—more distant excursions, including plant inspections and purely sight-seeing trips, were arranged for. November 26 was the sailing date for those American delegates who had no other foreign commitments. Again we embarked for a profitable and pleasant voyage; again we were entertained in Honolulu, and finally disembarked at San Francisco. The opportunities to hear men like John R. Freeman and Dr. Burgess sum up their impressions of the Congress on the return trip were among the most profitable experiences of the trip.

This brief story of the Congress as a whole will serve as background for a more detailed account of the management sessions, which will be of special interest to the Taylor Society group.

Section XII was called the "Scientific Management Section." Its opening session was simultaneous with the opening sessions of the other sections on Wednesday morning, October 30. All our chairmen were given every physical aid to the making of successful sessions. Efficient guides, visual devices for getting people to the proper place at the proper time, blackboard and table facilities, secretaries and translators, ample supplies of abstracts of papers, efficient rules of order, were provided.

Mr. Araki, the secretary of the section, was throughout one of its most able assistants. His knowledge of English, his ability to translate fluently from Japanese to English or vice versa, together with his keen sense of humor and energy, were invaluable assets. He is an engineer engaged in "efficiency work," who has made himself famous through his application of the principles of scientific management to a trip around the world. He separated planning from performing by sending in advance for time tables on all possible routes; by selecting the most economical in time; by providing for substitutes in case of delay. By this method he was able to make the trip in record time and within a given money budget! Mr. Ueno, also an "efficiency expert," well known as the organizer of the Taylor Society in Japan and, through his writings and visits to America and Europe, as a leader in the field of industrial psychology, was equally important to the sessions. Some of the pleasantest experiences of the American delegates came through our associations with Mr. Ueno and his charming wife. They were untiring in their helpfulness and seemed to take such pleasure in it that it was not until we had left that we realized the burden we had put upon them. Besides his duties as one of our hosts, Mr. Ueno frequently took over the difficult and tiring job of translator. He attended every session of the management section, sharing with Mr. Araki the responsibilities of keeping our program in order. These two men constituted themselves our guides, philosophers and friends throughout the complicated program of our busy weeks. It was they who made out our schedules and routed us through meetings, entertainments, lectures, shopping tours and excursions; it was they who procured invitations to speak to significant groups; they who did the painstaking translating; they who selected the appropriate gifts.

Dr. Mauro's energy and enthusiasm as well as his experience, through his presidency of the International Scientific Management Group, made him an excellent presiding officer for our first session. Professor Roe presented Mr. Alford's paper on "Scientific Industrial Management" at this session, expanding and interpreting as he went along. He also gave many illustrations to show how the methods in use in America must be adapted by Japanese engineers if they are to fit Japan's needs. At this session, as at all that followed, the seating capacity of the meeting room was greatly overtaxed. The greatest number of those in attendance were always Japanese and every effort was made to keep them in the closest possible touch with the proceedings. Every English paper with discussion was translated in detail into Japanese. The Japanese were given only in abstract in English. Mauro, Schlessinger, Petermann, Lewis, Spacek, Alexander, Emerson, Roe and I made up the biggest part of the "foreign group" and not all of us were present at each session. We were all anxious that the greatest good for the greatest number should result from the sessions and were content to piece out our information with abstracts and blackboard illustrations.

Dr. Schlessinger of the Technische Hochschule of Berlin opened the discussion of Mr. Alford's paper. His visits to Japanese factories led him to make some very severe criticisms of what he had observed. He mentioned overcrowding, worn-out equipment, low wages, inefficiency of performance, all indicating a great need for the application of scientific management principles. This was done in a most constructive manner, but as his understanding of the application of scientific management principles brought up the whole question of technological unemployment, and promised a heated discussion, it was decided to postpone this discussion until a later date.

An abstract of Mr. Van Derventer's paper, "Development and Trends in Standardized Quality Production," was read in abstract by a Japanese and most satisfactorily discussed by Mr. Ueno. His own summary of his points is included in his account of the Congress. At the close of this session the three chairmen, Dr. Mauro, Professor Roe and I, as well as the secretary, were completely agreed as to procedure. Satisfaction was also expressed at the way in which the meetings were going.

On Thursday morning it was my duty to preside. A bit of excitement was added to the task due to the fact that this was the day on which the Prince Chichibu was expected to visit our Section. The two listed papers, "The Movement for Rationalization in Europe" and "Theoretical and Practical Aspects of Scientific Organization in Italy," were presented as one by Dr. Mauro. His colleague, Mr. L. Palma, was responsible for the latter. Both attached great importance to the problem of technological unemployment and were inclined to agree with Professor Schlessinger in urging that every worker be brought up to the maximum of efficiency even at the expense of temporary unemployment. Professor Schlessinger opened the discussion by insisting that the principles of scientific management are the same everywhere, while Dr. Spacek of Czechoslovakia and our own Professor Roe pointed to the need of adapting the application of these principles to the particular situation. They emphasized the fact that it is an important part of the scientific management job to find work for any who may happen to be displaced by the new methods introduced. Mr. Araki described how the jinricksha men have been trained as chauffeurs, as automobiles replace jinrickshas in Japanese cities, and Mr. Harrington Emerson gave similar examples of adjustments that have been made in his experience in America. It was evident that the problem of technological unemployment is of vital importance in Japan as elsewhere. They feel the need of additional facts on the subject and of the application of the best brains of economists as well as engineers to the problem if a really social solution is to be arrived at. The distinction between the application of scientific management principles to individual organizations and the mechanization of industry in general was not brought out in any of these discussions, however.

Prince Chichibu entered as Mr. Ueno held the floor. While all stood and bowed, his escort of two accompanied him to the special arm chair which had been placed at the front of the room for him. He gave close attention to all that was said and remained until Dr. Mauro's eloquent closure was completed.

At the third session on Friday morning Vice Admiral Godo of the Imperial Japanese Navy presented a paper on "Some Experiences in Scientific Management in Marine Shops." It was an excellent exposition of the practical details of an installation of scientific management in the navy yards of Japan. Route sheets and other forms and mechanisms, together with charts and blackboard sketches, helped those of us who did not understand the Japanese text to get the meaning. It was splendid evidence of the knowledge of scientific management principles that Japanese engineers are acquiring and of the precise use to which they are putting it. A medical doctor, a rather strange figure in this engineering gathering, gave the next two papers—"Proper Duration of Rest Determined from the Course of Change of Oxygen Requirement After the Cessation of Work" and "A Study of the Proper Time of Meals as Determined from the Change of Oxygen Requirement in the Course of Working Hours." Dr. Takahashi's approach to the problems of fatigue is a novel one and his findings will be of interest to all who are seeking additional light on the subject.

Professor Roe presided over the final session of the management section on Monday morning, November 4. The first paper on "An Index Comparison Method for the Diagnostic Examination of the Mental Qualities of Inefficient Personnel, as well as of Traumatic Neurotics, Neurasthenics and Other Mental Diseases" was presented by a Japanese psychologist, Mr. K. Takanime. It constituted an exhaustive analysis of the use of a number of carefully selected physical and mental tests. Unfortunately neither the complete paper nor an abstract was available in English. The paper which followed, by B. Petermann, a German doctor of philosophy, on "Modern Research in General Psychology and Its Consequences for Industrial Psychology," was in strong contrast to the preceding paper based on the old psychology. In introducing it Dr. Petermann criticized the old psychology in general as obsolete, and the previous paper in particular because it was based on the old psychology. It seemed to me rather unfortunate that the results of years of valuable effort should thus seem to be swept aside. Dr. Petermann later endeavored to correct this impression and asserted his interest in integrating the old and the new, rather than in negating the old. His paper constituted an acceptance of the "Gestalt psychology of configuration" and "structuralism," or the "new doctrine of the structure of the psychophysical individuality of man." Because this new psychology has an appreciation of things as *wholes,* of behavior and of total situations, he holds that it will render much greater service to industry than the old psychology. I tried to point out in my discussion the difficulties attached to securing complete agreement in this field and the consequent need to use all the accumulated findings in order to arrive at any results at all.

There was a general feeling at the close that the management section meetings had been decidedly worth while to both the Japanese and the foreign attendants. Almost all that was new in the way of technique came from doctors of philosophy and of medicine rather than from engineers. The emphasis on technological unemployment was the outstanding thing that came out of the meetings. All the contributions of the Japanese seemed to evidence an acceptance of the principles of scientific management and of the "machine age," a belief in research and a fear of technological unemployment. It is regrettable that there was no time to discuss job analysis and job specifications, personality analysis and specifications and their bearing on this question of unemployment, as the Japanese have done some very able work along these lines.

In our lectures Professor Roe and I often had opportunity to discuss the industrial revolution of today with its effects on employment, and also the effects of scientific management techniques. It is our hope, therefore, that those most interested in the management movement in Japan realize that it is the aim of scientific management to prevent rather than increase unemployment.

Various organizations give evidence of the live interest in scientific management in Japan. The largest organized group consists of members of the various engineering societies. They have formed a group very like the management section of the American Society of Mechanical Engineers, except that it is open to other classes of engineers. While this group is co-operating with the others it is keeping the leadership in the hands of the technically trained engineers. On the other hand, the Institute of Industrial Efficiency, organized by Mr. Ueno, emphasizes the human element in the management movement. It has its engineer members but the psychologists, doctors and executives are its leaders. The "Association for the Efficiency Promoting Movement" has a wide appeal through its connection with one of the popular newspapers of Tokyo and through its program of lectures. It was my privilege to meet the leaders in all of these groups. Many are active in more than one, and it is to be hoped that their influence will be toward co-ordination of effort and the elimination of duplication.

The technical schools and universities have not as yet made courses in scientific management a part of their curricula but they are planning such courses and continually invite visitors who have had training and experience to lecture before their classes. The same is true in industry. Everywhere there is evidence of eagerness to learn from the foreigner, both in the attitude toward those from abroad and in the numbers of Japanese—engineers, teachers, executives and students—that are being sent to Europe and America to study foreign methods.

All of us were deluged with invitations to visit plants and schools and to speak before the groups that we met in them. Some of us made from twenty to thirty speeches during our brief visit. I was interested in seeing as many types of activity and in getting as complete a picture of as many types of individuals as possible. In working toward this end I visited a steel mill, a ship yard, a tabi (Japanese sock) factory, a match factory, a thermometer factory, a silk conditioning plant, a cloisonne works, department stores, banks, schools, and talked with many representative Japanese. In some of the plants I found equipment and methods equal to the best that we have here, though frequently I found confirmation of Dr. Schlessinger's criticisms. Suggestions and criticisms were eagerly asked for. There was one instance—a suggestion that Mr. Taylor's and Mr. Gilbreth's methods be made the basis of a study of shoveling—of immediate acceptance and a promise to install a brass tablet acknowledging the suggestion. In the department stores, banks and transportation offices, the special qualities of the Japanese are being used with great effectiveness.

Especially where hand processes are common—as in the cloisonne and wood carving establishments—one was impressed with the beautiful dexterity of these people. As an expert in motion study I longed for the time to study its secret. One has a feeling that this quality, evident in all they do, together with their love of beauty and willingness to work and learn, will carry them far in their program of industrial progress. They are, after all, extremely young industrially and have many serious handicaps to overcome. Problems of diet, heating and clothing, the caste system as it affects industry, are still matters of serious concern to them. But they are making rapid progress in their efforts to copy the achievements of the great world powers. They are learning to evaluate and measure and the kind of example that we give them will become of more and more importance.

The Scientific Management Discussions

By **YOITI UENO**
The Japanese Branch of the Taylor Society

THIS IS in answer to the request of the Editor for "an article . . . constituting a report of scientific management discussions . . . as seen through Japanese eyes." It is hoped that it will serve only as a supplement to other reports that will be made.

The two papers presented on the first day, October 30, may be regarded as introductory discussions on scientific management. The first, "Scientific Industrial Management," prepared by Mr. L. P. Alford and read by Professor Roe, summarized the tendencies and characteristics pertinent to scientific management in the United States of America. In the second paper, read by Professor Kiribuchi, Mr. Van Derventer summarized "The Development and Trends in Standardized Quality Production." You will note that he used the term "standardized quality production" in place of "mass production." He enumerated many related principles, such as the principle of interchangeability, modern inspection and control, the use of limit gauges, the application of jigs and fixtures to minimize required skill, simplification, decentralization of productive equipment, integration and co-ordination through mechanical handling, and emphasized the important place of scientific quality production among them all. As to the problems of "overcapacity" and "unemployment," which are the inevitable results of scientific quality production, he looks to the "thought and influence of the world's engineers."

In the discussion that took place immediately following the presentation of each paper Professor Schlessinger pointed out the inefficiencies that he had observed in Japanese factories and raised a number of questions as to wages, working hours and the lack of standardization. It was decided, however, to postpone the discussion of these particular matters until the second session, at which Dr. Mauro's paper was read. Professor Petermann emphasized the important role played by the "mental attitude" in scientific quality production and Mrs. Gilbreth pointed to the interplay of principles and their applications that goes on continually in industry. I, as a discussor as well as the interpreter of the session, mentioned the necessity for making a clear-cut distinction between the terms "mass production of standardized products" and "mass production in standardized operation." It is wrong to consider scientific management as inapplicable to factories making products in accordance with customers' specifications. Even when products are not standardized each operation necessary to make them can be standardized and operated in "mass."

Dr. Mauro's paper, presented at the beginning of the sessions on the second day, was a theoretical discussion of the place of scientific management in an industrial program. He treated it as a part of rationalization, and using this as his point of departure, sought a solution to the needs of a growing population in the organization of industry. The subsequent papers and discussions of the day were significant in that they focused attention on the question whether unemployment is an inevitable consequence of the application of scientific management principles in industry. The American delegates were as a whole optimistic in their attitude, while the Europeans were inclined to be pessimistic. The differences in points of view may be briefly summarized. For example, Professor Roe developed the very practical idea of using employes displaced in the course of the introduction of scientific methods in newly developed departments. But it is possible of application only in individual concerns. It would relieve unemployment within a plant or an industry, but not general unemployment throughout the nation. In Germany after the war, for instance, a general program of industrial regulation was put in force throughout the nation. In this case, as in other countries after the war, the complete avoidance of unemployment was only possible at the expense of "unemployment within employment." The practical application of the principles of scientific management must, of course, differ in time and scale in accordance with conditions existing in the different countries.

Professor Schlessinger's questions, raised the first day in regard to the long hours and low wages in force in Japanese factories, were taken up in the discussion that followed. Vice Admiral Hatano, who appreciated Mr. Schlessinger's criticism, eagerly asked for practical suggestions for the improvement of the situation. Discussion developed the view that a number of complicated factors are preventing the progress of scientific management in Japanese industries.

From the third day the sessions took up more practical problems. Vice Admiral Godo's paper, which was a report on the application of the principles of scientific management to the naval arsenal, was read by Professor Tanimura. The reading was followed by a number of questions and criticisms. The second paper of the third session was prepared and read by Dr. Takahashi. It was a report on experimental researches in connection with rest and meal periods, based on measurements of oxygen consumption. He recommends shorter rest periods combined with shorter work periods as being the most efficient so far as oxygen consumption is concerned. He also recommends food between regular meals in order to prevent extravagant wastes of energy. At this point it is interesting to note Muscio's recommendation that "the concept of fatigue be banished from precise scientific discussions, and that in its place attempts be made to measure the effects of different amounts of work directly upon mental and physiological functions, without the intermediary notion of fatigue; that is, measurement should be made to determine the effects of activity and not the presence or absence of fatigue." He thus focused attention on the mechanism of work and the changes which it undergoes while functioning. When these changes have been discovered and a ready means of measuring them devised, a practical solution to the problems of efficient work will have been suggested. Dr. Takahashi's investigation fulfills Muscio's requirements and should be given consideration by factory managers and employers.

On the fourth day of the session Dr. Takanime presented the results of his study of mental capacity. Mrs. Gilbreth expressed appreciation of his English explanation, which was accompanied by a considerable body of statistics.

The last paper was presented by Professor Petermann. He discussed the whole matter of scientific management in the light of present-day psychology. Emphasis was placed on his concept that scientific management is based on the older psychology, which is interested in the study of parts. He recommended a reconsideration, or retesting, of scientific management in the light of the Gestalt psychology, which holds that human activity should not be considered as the mere sum total of many constituent parts but as a whole. A short discussion by Mrs. Gilbreth may be considered an answer to Professor Petermann's argument. She acknowledged the necessity of retesting the older concepts of scientific methods in industry, but pointed to the difficulties inherent in trying for complete agreement among scientists on any subject. Since this complete agreement is hardly conceivable it is very important that available facts and findings be used.

The papers and discussions of the management sessions approached the question of scientific management from two angles, the theoretical and the practical. The former has to do with the principles and laws evolved as a result of various scientific investigations. The latter has to do with the practical application of principles. The result was a tendency for the theoretical sessions to become rationalistic and for the practical ones to become utilitarian. In order to attain reasonable success in management, however, it is necessary that the two angles coincide. This point was brought out most emphatically by Mr. Emerson when he said, "If there is scientific management there is no unemployment, and vice versa."

Wilfred Lewis

By KING HATHAWAY
Manning, Maxwell and Moore, Inc., New York

THE REPORT of the death of Wilfred Lewis, December 19, 1929, and his burial at sea off the coast of Egypt came as a shock to all those who knew him professionally or as a friend. A little over a year ago in San Francisco I received a letter from him telling me of his having retired from active management of the Tabor Manufacturing Company. He expressed satisfaction at being able to turn the business over to competent men who had developed with it and at being free to indulge in some of the "play" that close attention to business and engineering had denied him. He was enthusiastic about his visit to Japan and the prospect of renewing many friendships among the Japanese engineers, educators and men of affairs who had found at the Tabor Manufacturing Company the example of applied scientific management necessary to an understanding of Taylor's teachings.

Following the International Engineering Congress in Tokyo, which he attended as a delegate of the Taylor Society, the American Society of Mechanical Engineers and the Franklin Institute, he and Mrs. Lewis sailed for Europe on the round-the-world liner "President Wilson."

Mr. Lewis was born in Philadelphia on October 16, 1854. His parents were Edward and Elizabeth I. Lewis. He graduated from the Friends Central School in 1871 and in 1875 took the degree of B.S. in engineering at Massachusetts Institute of Technology. He then spent three years acquiring practical experience by working as a mechanic in the shops of William Sellers and Company. This was followed by four years as a draftsman. With such thorough training it is little wonder that he should have become pre-eminent in his profession. At Sellers' he continued to advance during the years 1883 to 1900. He served as designer, assistant chief engineer and finally as director.

It is as an engineer that Wilfred Lewis is best known. He loved his profession and took keen delight in its practice. He set a high standard for himself and for the companies he served, as he always placed perfection of design and construction above commercial expediency. His contribution to engineering may be measured and appreciated by the fact that he patented over fifty inventions. He was also recognized as an authority on gearing. In 1927 he was awarded the gold medal of the American Society of Mechanical Engineers for his contribution to the design and construction of gear teeth and in the same year the Longstreeth medal of the Franklin Institute for his invention of the shockless-jar molding machine.

He was one of the founders of the Philadelphia Engineers Club, a member of the Franklin Institute and of the American Society of Mechanical

Engineers in which for years he took an active part. He served on various committees and filled the office of Vice President for two years.

During the years that he was with William Sellers and Company, Wilfred Lewis and Fred W. Taylor formed a friendship that was to be terminated only by death. It was this friendship that led to Lewis' seeking Taylor's aid and counsel when he left William Sellers and Company. In 1900 he acquired a controlling interest in the Tabor Manufacturing Company which he had the satisfaction of seeing grow from a puny, pioneering business on the verge of failure to a thriving concern owning and operating a modern plant. When he took it over most of the products were manufactured by small contractors; today all operations are performed within the plant which is many times the size of the old company.

The achievements of Wilfred Lewis are not, however, to be measured by a financial yardstick. His commercial success might have been greater had his professional and business ideals not been of so high an order. To him making money was of relatively minor importance. In this he was sometimes rather a trial to his associates, especially when he wanted to hold up an important shipment in order to improve some detail of design that appeared to everyone else, including the customer, quite satisfactory. Or he might develop some feature of a molding machine to a higher degree of perfection and want to supply it free of charge to all users of that machine. That he was open to reason in such matters is evident, however, from the fact that the company succeeded.

While they appreciate his attainments as an engineer, few people realize how much the industrial world owes Wilfred Lewis for his contribution to the advancement and popularization of scientific management. Through his interest, his generosity and his abiding faith in Taylor, the Tabor Manufacturing Company became a laboratory in which elements of the Taylor System of management were developed and perfected until it became a complete, well-articulated and smooth-operating machine governing all functions of the business. It was responsible for co-ordinating administration, sales, design and operation in all its details. For many years this organization served as a model installation which visitors were free to study at any time and for as long as they wished. This privilege was enjoyed by engineers, students, executives, teachers, army and navy officers, from all parts of our own and from every other civilized country in the world. Trained men were graduated from the Tabor Manufacturing Company's own force into higher positions in other companies to assist them in the application of the Taylor System. The practices of the Tabor Manufacturing Company were presented as an illustration and object lesson in the famous "Rate Hearings," when Louis D. Brandeis, representing the Eastern Shippers, proposed that by adopting the principles and methods of scientific management the railroads of the country might save "a million dollars a day." And it was the broad-mindedness and sense of social duty of Wilfred Lewis that made all this possible.

An idea of his varied social tastes and interests may be had from scanning his non-professional connections. He was a member of the Historical Society of Pennsylvania, of the Art Club of Philadelphia, of the Merion Cricket Club—a Republican and a member of the Unitarian Church.

In 1895 Mr. Lewis married Miss Emily Shaw Sargent of New York. They had three children—a daughter, Emily, and two sons, Wilfred Sargent and Leicester. The charming hospitality of the Lewis home will long remain a pleasant memory to those of us who knew it.

As a business associate and employer Mr. Lewis was first of all a friend. He was kindly to the point of overindulgence. When he could bring himself to reprimand anyone it was obvious that it hurt him as much as the recipient.

During the war he gave valuable technical service as a member of the War Industries Board.

Mr. Lewis was a founder member of the Taylor Society and at all times interested in its work. We lose a staunch supporter in his going.

European Appraisals of "Recent Economic Changes"

A Composite View

By L. F. URWICK
Director, International Management Institute, Geneva, Switzerland

WHEN I was asked to comment on "Recent Economic Changes," I immediately wrote to the members of the Governing Body of the International Management Institute, to whom the actual report of the Hoover Committee had already been circulated, to ask them if they would assist me in forming an opinion. Unfortunately insufficient time was available for more than a few replies to be received. These comments must, therefore, be regarded as the joint work of these men and myself, though as I have not had an opportunity of consulting them in detail, I must take full responsibility for any opinions which are expressed.

It is sometimes imagined by Europeans that because the word "rationalization" was first used in Germany and has not obtained any widespread popularity in the United States, it represents a group of ideas which are largely European in origin. This is only partially true. The portion of the rationalization concept which is concerned with the cartelization and trustification of industries has not hitherto appealed to America, owing to her long tradition of legislation directed against business combination. But it must be recognized immediately that it is not the form of organization which is adopted for any purpose which is of importance, but the character of that purpose. Whether an industry achieves a common policy based on a scientific study of facts by means of complete unification of the independent business units, or by other means, is of far less importance than the fact that it does achieve a common policy.

The first interest, therefore, of the report of the President's Conference Committee to Europeans is the fact that it shows, without the shadow of a doubt, that America has been engaged in rationalizing her industry, in the full sense of that term, more rapidly and more completely than almost any other nation. Moreover the views of her leading statesmen and business leaders as revealed by the actual report of the President's Conference Committee show that they are entirely in sympathy with the ideas which inspired those in other countries who are working for rationalization. To quote one arresting bit from the report: "Research and study, the orderly classification of knowledge joined to increasing skill, well may make complete control of the economic problem a possibility. The problems are many and difficult but the degree of progress in recent years inspires us with high hopes." Those who have been working for rationalization in Europe are sometimes accused of being theorists. Here we have the mature conclusions of a group of the most responsible intellectual leaders of the greatest business nation in the world, conclusions based on a wealth of national statistics such as have never previously been brought together. They express precisely the underlying thought which inspired the rationalization resolutions of the World Economic Conference of 1927—"Complete social control of the economic processes as an end; the use of the intellectual methods and standards of science as a means; these are the basic conceptions of rationalization."

This, then, is the primary value of this survey to Europe, that it demonstrates beyond any possibility of argument, that those who have been the architects of American prosperity have themselves worked in the very spirit which the adherents of rationalization are trying to introduce into the economy of the European countries. Of the general value of such a survey to the government and industry of any country as an aid to the determination of public and business policies, there can be no question.

It is impossible for anyone who reads the statistics contained in this survey objectively to doubt for a moment that, whatever the special circumstances in American economic conditions, there are elements in her business life, of initiative, of appreciation of scientific method, of bold experiment in new forms of collaboration between government and industry, which have undoubtedly contributed vitally to her rising level of material well-being.

It is noticeable in the case of nearly all the statistics given in the survey that there was a very marked change in the period immediately following the business depression of 1921-22. Before that date earnings and prices had tended to move on parallel courses almost throughout the period for which exact statistics are available. After that date they tended to move apart. Special conditions which many European observers attributed to America operated both before and after that period. Why this sudden change, this astonishing recovery from one of the sharpest economic crises which has occurred in American history? Obviously there was a new factor. And the only new factor which was introduced at that stage into the economic life of the American people was the campaign for more scientific management practices, for standardization, for simplification, for better and quicker statistics, which dated from Mr. Hoover's appointment to the Department of Commerce and the publication of his famous survey on "Waste in Industry."

It is not only America which has cause to be grateful to Mr. Hoover. He has fathered and encouraged many works of European relief, all of them directed in the spirit of humanity. He helped and encouraged the first tentative efforts in Europe toward international organization for the study of scientific management and rationalization. The study of "Waste in Industry" has been an inspiration to business men who are fighting for greater efficiency in every industry of the world. In one sense it seems but natural that Mr. Hoover, elevated to the most responsible office in the gift of any democratic nation in the world, should have continued along the same line of assisting objective thinking. But how many statesmen in the course of history have risen to ever wider and wider responsibilities with perfect consistency? It is a great pleasure to those of us in Europe who have found friendship, help and inspiration from the scientific management movement in America to make this acknowledgment of our indebtedness.

It is of course clear that many of the elements which entered into the total situation were not consciously adopted as a policy of the business men of the United States as a whole. The doctrine of high wages is a case in point, but there is equally no question that in the light of the survey it is impossible to call prosperity a matter of pure luck.

It is much to be hoped that statesmen and business leaders in other countries will read "Recent Economic Changes in the United States" from cover to cover and will make a serious effort to apply the lessons which it contains to their own economic situation. The economic instability of Europe is having its effect not only within the countries of Europe but on the world in general. The concluding chapter of the survey contains quotation after quotation showing how America herself is suffering from the economic instability of Europe. A splendid isolation is the line magnificent. It cannot exist in the modern economic world.

A Belgian Opinion

By EDMOND LANDAUER

General Secretary of the International Committee of Scientific Management

"WHAT IS the value of such a survey to the government and industries of any country as an aid to the determination of public and business policies?" was the question put to me by the managing director of the Taylor Society. What is the value of a pressure gage to the boiler engineer or of scales to a chemist might just as well be asked.

The main weakness of our industrial and economic life is, that it is on the whole unscientifically conducted. The rule of thumb is disappearing from the shops. Motion studies, scientifically conducted investigations, are the foundations on which private business policies are built. But, when it comes to the more general and more important rationalization of the policies of an industry as a whole, of the industries of a nation, or of the different nations of the world, the fact-finding method is at once dropped. Whereas painful investigations are made to fix the piece rate of a turret lathe, presumptions, guesswork or political theories are the only materials resorted to when it comes to determining the business policies of an industry or of a country. Every day, in almost every country, new factories are built, big sums of money are invested, only to find out afterwards that the market is already oversold and that the new mills are just added guests at a dinner where there is already not enough food to accommodate the previous ones.

In Belgium we are not very fond of letting the state interfere in any marked degree in the field of private industry. But, nevertheless, we feel that the state departments are the places where we ought to find facts when we want them. A report like the American "Report on Recent Economic Changes" should go a long way in helping business men to make the right decisions based on a scientific survey of the field and to avoid tremendous financial and economic wastes.

What is the potential producing capacity of the existing mills in a given line? Is the public consuming power at its limit or is consumption increasing, and why? Is taxation imposing too high a burden on the economy of the country? These are all questions which must be scientifically answered before the right course can be chosen. Without such an answer there will be all the difference between planning and gambling in determining the policies of an industry or of a government.

Since the war most countries are wondering at the marvelous prosperity of the United States. A lot of nonsense about the causes of this prosperity is being circulated by people who never crossed the

Atlantic or, if they have crossed it, have no gift of analysis. In the main, people believe that American prosperity is due to pure luck or to unduplicable conditions.

One of the biggest benefits gained from a study of the "Report on Recent Economic Changes" is that it points out the "why" and "how" of American success. After reading it one can no longer say that other nations cannot do for themselves what the United States did. Even admitting that statesmen and business men of the United States did not deliberately go after that prosperity which came about, it is nevertheless a fact that the report contains usable and practical advice about how to duplicate the miracle. One can no longer say that prosperity is a matter of pure luck. The report shows that it is a matter of pluck, will and horse sense. It is to be hoped that leading statesmen and business men in other countries will try to apply the American recipe to our European cooking and learn the lesson which they can get free.

For a country like Belgium, whose trade depends largely on export, it would be highly beneficial if more countries would make such a survey. We would then know where we have the biggest chances of selling our goods and could shape our manufacturing policies on actual facts instead of on guess as to the needs and buying power of our prospective customers. But there is more than a purely economic interest in such surveys. By the fact that the report takes the machinery of American prosperity to pieces and shows how it may be copied it might be used as a powerful instrument to promote the application of more scientific methods of management in private and public life in the world. Whether or not other nations are following on the path of prosperity is not a matter of indifference to any nation. The actual peace of the world may be endangered again if one country alone is efficient and rich. The inefficiently managed countries or industries will be beaten in the international battle for markets and orders. Their mills will be closed one after another, the army of unemployed will grow up to the time when some desperadoes, having nothing to lose, will try to shatter, by war or social unrest, their more successful competitors. Nelson's flagged order: "England expects every man to do his duty" might be modernized and worded: "The world expects every nation and every man to get efficient and rich."

Peace is the daughter of general prosperity just as revolution and war are the children of misery. For the sake of humanity, every country ought to make a survey like the American report, just to see where it stands and what are the real reasons for its being less prosperous than the big republic overseas. Like the American report, such a survey ought to take the national economic machinery to pieces and study separately every part—standards of living, industry, agriculture, marketing, finances, transportation, labor, management, and so forth—bringing forth a whole harvest of facts from which it would be an easy task for every business man to draw the proper conclusion.

The economic world cannot be properly conducted before the laws of economic success are scientifically established. Only from many such reports, made in different countries, can enough facts be recorded and tabulated to permit the enunciation of these laws.

Law and custom require that every business man have his books audited at least once a year and that he present a statement of his assets and liabilities. On such statements the bankers, and the world at large, rate the credit that may be allowed. Why should whole industries and countries whose appeals to world credit are much bigger act otherwise and go on year after year without knowing where they stand, where they are going, and what they ought to do to escape bankruptcy?

We are, in Belgium, already much indebted to the United States of America for the help given us during the war. But I believe we must be just as thankful now for the help they are giving us by showing the way to prosperity. As a Belgian citizen I am glad to have an occasion to express our thankfulness.

A British View

By OLIVER SHELDON
Rowntree & Company, York, England

One of the most noteworthy features of American industrial life, so it appears to a visitor, is the wealth and variety of information which is at the disposal of those who direct the fortunes of industry. Government statistics are very comprehensive; the newspapers and journals furnish exceedingly interesting and variegated data; there are available, too, the results of many species of field surveys; and, furthermore, there is the very valuable information which businesses appear ready to exchange with each other concerning their own particular trade circumstances. In total, it strikes the visitor forcibly, as I was struck on my recent delightful visit, that the American business man lacks for comparatively little, in so far as general statistical knowledge is concerned.

The "Report of the Committee on Recent Economic Changes" is a further striking testimony of this fact. Brief as has been my opportunity to examine the two bulky volumes which Dr. Person thrust into my hand in New York only a short time ago, there has been ample time to appreciate that here is a summary of American economic conditions of immense value, absorbing interest and comprehensive scope—an inestimable index in business policy making, a most serviceable check on the attainments of individual businesses, and a highly inspiring incentive to further progress on sound economic lines.

The detailed statistics and data furnished in these two volumes are, of course, in themselves of exhilarating interest. The outstanding value of the work, however, seems to be in the massing of all this information into one related whole, and the summarizing of it into considered and digested reports. Every word and phrase of the main committee's report is significant and thought provoking when one knows, as these volumes testify, that the conclusions have been reached on a comprehensively factual basis. There have been many attempts particularly by visitors from abroad, to analyze the causes of American prosperity and forecast its future; these two volumes provide the sifted and balanced facts which are necessary to their purpose, and the judicial summary which tabulates all that the best American thought has to say on the subject.

And how vitalizing is this summary! "The changes have not been in structure, but in speed and spread" . . . "The breadth and scale and 'tempo' of recent developments give them new importance." . . . "The rising standard of living characteristic of this period was widespread, and has reached the highest level in our national history." Then follows a rapid review of causes. "As a nation we now use as much electrical energy as all the rest of the world combined." . . . "The unit cost of production has been reduced, the drudgery eliminated from much unskilled work, and wages maintained or actually increased." . . . "The earnings and savings of the people supplied the additional capital for financing the rapid development of industry." . . . "In the period from 1922 to 1927 the purchasing power of wages rose 2.1 per cent a year." . . . "The increase in per capita productivity in manufacturing from 1922 to 1925 was 35 per cent." And so the tale of achievement goes on. Then come the lessons and warnings for the future —the importance of maintaining economic equilibrium (a most absorbing thought), the need for further study of the principle of high wages and low costs, and the necessity of "informed leadership," "incessant observation and adjustment," "hard, persistent, intelligent effort," "consideration and sympathy" and "mutual confidence." There is, in this report alone, apart entirely from the galaxy of facts behind it, enough food for thought for industrialists the world over to occupy their minds and direct their policies for a generation.

Speaking for myself, I have read with special interest the sections of the main committee's report on "Optional Consumption," "Consumption and Leisure" and "Economic Balance"; the reports on the "Changing Structure of Industry," "Marketing" and "Labor," and of course, the exceedingly able Chapter VII on "Management." The last strikes me as by far the most sober and judicious review of the present position of management technique that I have read. Unlike a good deal of published material, it makes no extravagant claims as to what has been achieved. It admits, for instance, that "organization charts are maintained by relatively few companies, and fewer still keep them up to date," whereas a stranger might imagine from much that he could read that organization charts were one of the primary adjuncts of American industrial success. Similarly, one is told that "selection for promotion rests as yet almost wholly upon the general judgment of results," whereas much published literature—valuable enough in itself—might lead one to think that scientific schemes of "rating" were indispensable to the present standard of American efficiency. The report on management, in fact, states soberly and impartially the present position, whilst indicating the directions in which pioneering minds are moving, without claiming in any degree that the work of the pioneer has as yet received general acceptance. It is, in my view, an admirable statement.

A singularly interesting train of thought will, I think, be set up in the minds of many by the emphasis laid by the committee on the subject of "the principle of equilibrium," applied in every economic relation. It is, I am convinced, a fundamental principle, applicable not only to the whole economic structure of a country, but equally to the structure, efficiency and trading activities of the individual business. Equilibrium, for instance, is a vital principle in building the structure of an organization—the preservation of balance between functions, the relationship of facilitative functions to executive functions, of research to production, of administration to management (using the definitions I have ventured from time to time to emphasize). Balance or equilibrium is the restriction of what is auxiliary to purely auxiliary work so that the responsibility for executive action may remain unimpaired; the assumption and execution of its proper duties by Administration so that, by a proper balance between the two, Management may work efficiently under soundly conceived and clearly presented policies. Then, again, there is the need for equilibrium in the development of efficiency. How often has one witnessed the high potential efficiency of a manufacturing unit impaired by a maladjustment between production efficiency and marketing efficiency? Or, a maladjustment between productive capacity and the market requirements? Or, a maladjustment between process research and market research? Is it not largely true that every business tends to become out of balance, unless those who direct it constantly review the "spirit-level" and put matters right? We have all given thought to the harbor toward which we would guide our industrial ship; we have studied its equipment and all the problems of its engineering; we have given much thought to its crew and officers. The thought before us now is the principle of the "even keel"—balance, equilibrium. And, in these few notes, I would venture to suggest the importance of studying this in every branch of industrial activity as a separate problem —the problem of equilibrium—in organization, in research, in plant capacity, in trading, in staff relationship and in goods.

It is not a far cry from the subject of equilibrium to that of mergers—the subject dealt with under the heading of "The Changing Structure of Industry," and one which I feel it would be foolish to omit even from such brief notes as these. It is difficult to pick out significant figures without a more detailed study than time has allowed me, but the fact is surely impressive, that whilst an annual average of ninety-seven manufacturing and mining mergers took place in the years 1919-1923, the years 1924-1928 witnessed an annual average of 156 such mergers, and that from 1922 to 1928 annual figures have shown a steady increase. It is highly significant too, that what one may call "the urge to merge" is found to be a general movement, not confined to any particular industry; and, still more so, that the incentives behind the mergers are today normally rather the need for additional capital and for the adoption of up-to-date marketing methods than the earlier motives of forming monopolies or reaping the profits of company-promotion—motives of permanent value rather than of ephemeral and chance occurrence.

We are facing the first stages of a new era of industrial structure; the facts presented in this report give a foretaste of it, and subsequent facts in 1929 continue to bear it out. If the past twenty years have deserved the title of the "era of large-scale industry," the next fifty years will, I am convinced, merit the title of the "era of industrial combination." It is, of course, no task of the committee responsible for these reports to essay flights into prophecy, but those of us who read are inevitably driven to a probing of the future, and I can foresee that the problems consequent upon the new era of combination in industry will be new problems, of a different order, and on a different scale. They will not be solely industrial problems—problems of management, organization, labor or accountancy; they will be vast social problems; and once again the "principle of equilibrium" will have to be invoked and respected if this new era is to win through to success. The social reactions of a system of industrial and general combination, such as is now upon us and growing before our eyes, constitute a problem which it will well repay our best minds to study. I can dimly see a shifting economic world—fresh developments in industrial organization and methods; new circumstances governing the relationships of capital, management and labor; a new role opening before the whole body of consumers; and a change in the whole constitution of the ownership of industrial capital—and this shifting economic world will revolve around the new phenomenon of an industry organized in colossal units, the forms of which are already taking their vasty shapes today. In time—and perhaps the endeavor should not long be postponed—the circumstances which induced one writer to compile a philosophy of industrial management will be so altered as to demand from a far abler pen a philosophy of "combine" management, and to the terms of that philosophy I would direct the thoughts of you all.

On the report on the subject of "Management" I have already commented; and I repeat that it is wholly admirable. There is much in this review of the present position of management to engender speculation and thought as to the immediate future, and many hints dropped as to the subjects which should engage our thoughts and plans. Our attention, for example, is directly drawn to the problems of the organization structure, apart from the financial structure, of the mergers referred to above. We are invited again to consider the position, duties and qualities of the chief executive—a problem to be reviewed again in the light of the great merger development ahead of us. The problems of executive promotion are also thrown into the limelight; as also "the planning of sales effort," the technique of budgeting and the subject of forecasting—an allied group of subjects. The problems of labor mangement in the future leap to one's mind as hints are dropped here and there in the reports on unemployment, technical skill, selection and joint relations. The whole review of marketing management is a series of challenges to our thinking for tomorrow. And, finally, the concluding words of the "Summary" deserve full repetition. "During the last generation we have many times found that it pays to get men of better than average intelligence as operators of intricate machines, and to institute careful methods of training for them. We are seeing now more and more clearly that management—the continuous adjustment and steering of our business machinery—demands also its special intelligence and its careful and continuing training."

A careful reading of this report would furnish an admirable agenda sheet for the thinking of all industrial executives for the next twelve months. At that, one must leave the subject.

In conclusion, let me refer to one general thought which persistently assails my mind as I quickly run over these whole 934 pages of condensed material.

In the "Introduction" to these two volumes, the purpose of this great economic survey is summarized as "that the range of social vision may be widened and the sense of direction in economic and social change may be surer." It is an indication of the high purpose and broad viewpoint of those responsible that a summary of the objectives should be so phrased; for I read into this, and would have others read into it, that, though this is a report on economic changes, its purpose is largely social. The complex interaction of economic facts and social change is suggested in these words. Economic facts, as presented in these pages, depict a scene of swelling prosperity; but, if the purpose of this survey is to be truly served, the anxious questions must follow as to the direction and scope of social change. What of it? What of this "utilization of our increasing leisure?"—of "the considerable margin of earnings available for optional consumption?" of the use to be made by a great people of its rising standard of living, its higher individual earnings, its increasing leisure, its constant flood of new luxuries and desirable appurtenances of living? The life of a people—its virility, development, leadership and contribution to the well-being of the world—does not depend alone upon its economic progress; it must study, too, the direction of its social thinking, and the tenor of its moral, artistic and spiritual development. As one reads, therefore, of economic progress and abounding material prosperity, one confronts an immense vision of the responsibility that all the more devolves upon leaders of world-thought in every sphere of social activity to ensure that progress in material things is paralleled and balanced by progress in the things of the mind and the spirit. I have oten quoted, and may well quote again, the words of that scholarly thinker, Mark Pattison:

> While the advances made by objective science and its industrial applications are palpable and undeniable all around us, it is a matter of doubt and dispute if our social and moral advance towards happiness and virtue has been great or any.

It is, I think, in the spirit of the purpose with which this great economic survey was undertaken that the challenge implied in the above quotation should be flung out; and the whole of the work on this survey will have been more than justified if, apart altogether from the many lessons to be learned and points to be considered, the minds of those in positions of responsibility and trust in industry and commerce, the world over, are directed to a consideration of how best economic advance may be made to serve the higher purposes and nobler elements of our world-community of peoples.

A French Labor Leader Interprets Scientific Management

By **MARY VAN KLEECK**
Russell Sage Foundation, New York

"WE SEEK together to discover the deep sources of productivity and of joy," said H. Dubreuil, French mechanic and secretary of the General Federation of Labor of France, speaking at a meeting of the International Industrial Relations Association held in southern Germany last July. The subject of six days' discussion had been "Methods of Promoting Satisfactory Human Relations in a Scientifically Organized Industry." At the last session, where Mr. Dubreuil spoke, the presiding officer was a German employer, Dr. F. Meyer zu Schwabedissen, of the firm of Bertelsmann & Niemann, velvet manufacturers in Bielefeld, Germany, and other speakers included an employer from the United States; an Italian engineer who described the Fascist program; a young English girl, member of the Labour Party, employed in Cadbury's factory; a representative of the International Labour Organization; and the secretary of the Belgian Christian Trade Unions, who also had served as a member of the International Economic Conference and could speak from an international standpoint regarding labor's attitude toward the European movement known as rationalization.

Mr. Dubreuil was speaking to and of this varied group and the others, as representative as they, who had made the I.R.I. discussion truly a meeting of minds, when he spoke of the effort to find a common basis for action toward scientific management. His remarks take an added interest for readers of the BULLETIN OF THE TAYLOR SOCIETY when it is realized that Mr. Dubreuil is the author of the book "Standards." A forthcoming translation of this book into English is being sponsored by the Taylor Society and published by Harper & Brothers under the title "Robots or Men?" It gives this French mechanic's interpretation of mass production as he saw it in the course of a year's employment in American factories.

Basing his view in historical retrospect, Mr. Dubreuil told this international meeting in Germany that "we perceive that the productivity of labor has been increased in proportion as certain types of higher social life have been attained." Historically, labor has often reacted blindly and negatively against intolerable conditions, but leadership has emerged which gives a wider view, despite these obstacles of past experience, and is modifying gradually the passive role into proposals today for labor's collaboration in management.

But where in mass production is the hope of that joy in work which is a source of increased productivity? The artist gives the answer, says Mr. Dubreuil. He expresses an idea in marble, he works with tools, and he so devotes himself to his work that he loses all thought of time. "Considered from this point of view, the artist appears to be the supreme type of the workman." And like the artist, also the peasant and the self-directing employe often display the same zest in contrast to the workman who keeps his eye on the clock because his creative powers have no scope. "The true solution of the problem of labor consists in finding the means of releasing the inner spontaneity which evidently impels invariably all those who afford us an example of the maximum productive activity."

How are these sources of spontaneity—these creative impulses—to be released? "We are thus led to believe that in order to solve the problems of labor we have to investigate the laws of harmony"—a harmony now displayed in music, in architecture, and perfectly in astronomy and in the growth of flowers. "Some day we shall look back with curiosity at the efforts made today to bring a little order into the organization and the relationship of work. We shall then understand that our 'scientific methods' today are merely the application of transitional procedures between the disorganization and the unhappiness of the past to the order and harmony of the future. . . . We shall then recognize with astonishment that we have taken so long to understand what the history of human activity has shown everywhere, that of all great and beautiful achievements none has ever been accomplished except by the force of inner motive power, and never by means of pressure from without. We have thus to discover the living sources of activity and at the same time the laws of harmony of human effort, and it is there that we see the joining in a common direction of those efforts which are directed toward the attainment of scientific organization of work, that is to say, a certain harmony in material things, and those which seek to find the way to better relations between men, that is to say, a certain moral harmony."

These quotations give only certain high spots of this address, which will shortly be published by the I.R.I. in the book containing the results of these discussions. Mr. Dubreuil, with the eye of an artist, the experience of a mechanic and the growing insight of a labor leader, is indicating the far reaches of a complete application of science to industry—the discovery of the laws of social harmony to be added to the discovery of the laws of physical and technical order in the workshop.

Index to Volume XIV

The index to Volume XIV has been printed for binding with that volume of the BULLETIN. A copy of the table of contents, title page and half page will be mailed to any member or subscriber on request.

(*Continued from page* 17)

likewise measure the rate of credit expansion from year to year, and even month to month. Between the two exists the definite balance of which I have spoken.

"The evidence now seems clear that an excess of the rate of credit expansion over the growth of production and trade results merely in the familiar forms of overstimulation, inflation and speculation. If the rate of credit expansion falls below that of the normal gain in product, the result appears to be a crimping and contracting influence, bringing with it unemployment and a check to the normal growth.

"The proof of this narrow relationship, this sensitive balance, seems to me the most important contribution which statistical investigation has made to economic theory, and its recognition as a working rule of banking and credit policy may prove the greatest gain which we may have derived from our now centralized and unified banking system."

Annual Business Meeting

THE ANNUAL Business meeting of the Taylor Society was called to order at four o'clock, December 5, 1929, in Room 611, Engineering Societies Building, New York. When it was ascertained that a quorum was present the meeting adjourned to larger quarters on the first floor of the building. Reports of the Treasurer and Managing Director were accepted and results of the election of officers announced. After the adoption of resolutions for forwarding to President Hoover, (see page 253, previous issue) the meeting was given over to a discussion of plans and policies for the ensuing year.

The new officers follow:

President and Director: (1 year) Henry P. Kendall, President and Treasurer, The Kendall Company, Boston, Mass.

Vice President and Director: (2 years) John G. Aldrich, President, New England Butt Company, Providence, R. I.

Treasurer and Director: (1 year) E. W. Clark, 3d, E. W. Clark & Company, Philadelphia, Pa.

Director: (2 years) John M. Carmody, Editor, *Factory and Industrial Management,* McGraw-Hill Publishing Company, Chicago, Ill.

Director: (2 years) Louise C. Odencranz, Executive Secretary, Employment Center for the Handicapped, New York.

The following nominating committee was selected to nominate officers for the ensuing year:

N. I. Stone, (Chairman), New York; B. Eugenia Lies, New York; A. B. Rich, Framingham, Mass.; Ernest G. Brown, Bristol, R. I.; T. C. Eckstein, Chicago, Ill.

News of the Sections and Notes

Central New York

January 28: "The Economic Outlook for 1930" by J. C. Howell.

New York Metropolitan

January 24: "Report of the World Engineering Congress Held in Tokyo, Japan, November, 1929," by Lillian M. Gilbreth.

University of Pennsylvania

January 10: Farewell meeting to Professor Lansburgh at which he and Dr. Person spoke. The group presented Professor Lansburgh with a watch, in appreciation of his inspiration and aid to the Section.

Washington, D. C.

Three successful round-table luncheon meetings have been held by this newly formed group. At the November meeting Edward Eyre Hunt talked on "Recent Economic Changes"; at the January meeting Otto S. Beyer spoke on "Recent Developments in Systematic Co-operation between Labor and Management"; in February, Edwin W. Ely on "Simplification of the Products of American Industry."

Fourth International Congress of Administrative Sciences

The Congress will meet in Madrid, May, 1930, to continue the deliberations of the Paris Congress of 1927. It is hoped that a large number of American experts in public administration may be able to attend. For further details, address Leonard D. White, Department of Political Science, University of Chicago, Chicago, Ill.

Fifth International Congress of Scientific Management

Plans are already well under way for the Fifth International Management Congress to be held in Amsterdam in 1932. It is hoped that the American attendance and contributions will be representative of the best in American management.

Reviews

Economics and Ethics. A Study of Social Values. By John A. Hobson, C. D. Heath & Company, Boston, 1929, pages xxxi, 489.

The Next Ten Years in British Social and Economic Policy. By G. D. H. Cole, The Macmillan Company, New York and London, 1929, pages xxi, 459.

What America lacks in economic philosophers, England tends to supply; and John A. Hobson is a student of the broad view of the industrial process whose thinking has a temper and range unfortunately rare in this country. In his last book, Mr. Hobson is examining in his fresh, human, non-academic way the relation of ethics to economics. And he is concluding that no science of wealth or of economic organization is ultimately possible unless and until ethical considerations are raised. His teaching on the whole is not unfamiliar to the younger American economists; but it is a teaching which has had as yet too little influence on the actual industrialists of this country whose disposition still is to use economics for purposes of apology or of ulterior control.

Perhaps to a general American business audience the work will be most pertinent in its least abstract portions. The discussion of "economic harmony and discord," for example, emphasizes ideas about the conflicts of interest in economic life which deserve far clearer recognition with us among legislators, public administrators, judges and business men alike. The relation of conflicting interests to wage problems and to agricultural versus industrial claims on the national income, is discussed with refreshing realism. And the absence of economic standard when and where ethical forces are not given weight is convincingly analyzed.

Similarly, the impossibility of conceiving matters of national economic interest without constant reference to world economic inter-relations is demonstrated beyond all question. Mr. Hobson has that rare faculty of carrying an idea through to its necessary next step and consequence, which is so unusual under conditions of American opportunism, and of doing it in a way which constantly relates it to the inevitably necessary, next-step decisions of business advance.

On the basic, highly baffling and immanently threatening problem of world control of population, the author has the same ability to combine a fundamental view with those considerations of immediate national policy which are currently in the air.

The concluding emphasis upon the strategic place of credit-issue in the modern economy is, again, penetrating, practical and fraught with large implications; altogether a book to provoke thought and the deepest critical examination of the tacit premises underlying the day-by-day preoccupation of all of us engaged in the operation of business. The only regret is that the reference to American examples and authors is so slight—although this cannot be said to impair the validity of Mr. Hobson's conclusion as applying to our own economic scene. The book is heartily recommended to everyone interested to know the direction which economics and economic life seem to be taking. It would be significant, indeed, if the kind of factual examination involved in American books like "Waste in Industry" and "Recent Economic Changes" could be wedded to the philosophic outlook found in English studies like the present one. The issue would be a type of penetrating economic prognosis which the world literally has never yet seen.

Mr. G. D. H. Cole's latest book is more completely English in content and application. It is in the first instance a recantation, or better a modification, of the statement of Mr. Cole's earlier views of guildism; and in the second instance a statement of his view of where British political and economic life will move in the next decade. The specific content interests us less than the general conclusions of this astute social scientist. These are to the effect that the trend toward greatly increased public control is consonant with a variety of forms of organization and operation in the running of different industries. Of equal interest, from the point of view of a needed American economic philosophy, is the kind of method employed, the sweep and synthetic quality of thought brought to bear on questions which in this country we tend to compartmentalize too much in our thinking and planning.

Whatever else we can or cannot learn from industry in England, it is clear to me that we can learn how to think about industry from this co-ordinating, "rationalizing," statesmanly point of view of their best economic scholars.

Ordway Tead[1]

British Industry Today. By Ben M. Selekman and Sylvia Kopald Selekman, Harper & Brothers, New York, 1929, pages 290.

Enthusiasm without stint is the reaction of this reviewer to the extraordinarily well-written volume which the Selekmans have turned out in their timely study of the trend of industrial relations in Great Britain. These two capable investigators spent a year in first-hand investigation of developments in the British labor situation. They came back with a mine of information, detailed and documentary, but instead of plunging into an academic report they set out first to produce a short, readable summarization of their principal findings, for the benefit of the well-meaning citizen who would be oppressed by his inability to read a lengthy and scholarly tome. The wonder is that the authors have actually had the moral courage to free themselves from the weight of new learning. Their volume is a genuine accomplishment in informative and authoritative reporting combined with excellence in presentation. Use is made almost to perfection of the short, simple, pointed sentence that advances the argument throughout and presents a clear and animated writing that makes absorbingly interesting reading. Yet no sacrifice is made of impartiality or accuracy to style. Possibly, there is a slight over-dramatization of the significance of the Mond-Turner Conference, but whether it will prove to be but another talk-fest and of only temporary importance, or a real turning point in British affairs, is as yet sufficiently in doubt to justify the hopefulness with which the event is viewed.

The main theme of the study is the record of the occurrences which have given the British labor situation so different a complexion from the revolutionary appearance of the postwar period, or the confusing aspects during the time of the general strike. Since the report may be read in a few sittings a summary will not be given here. That the volume is of special interest to members of the Taylor Society is suggested by the following excerpt, which strikes the keynote of the book.

"What makes the whole development most interesting and significant, particularly in England, is the fact that the labor group is today exerting pressure upon employers to make industry more efficient. This becomes more remarkable when we recall that the labor movement there as in most of Europe is dominantly socialistic. But the force of events is fast consummating a strange alliance—even in Russia—between Karl Marx and Frederick W. Taylor; and although the theory of Taylorism, as they call it, still meets denunciation among labor men, its practice, or rather that of modern scientific management, is rapidly gaining their advocacy."

Herman Feldman[2]

Applied Business Finance. By Edmond E. Lincoln, McGraw-Hill Book Company, New York, Fourth Edition, revised and enlarged, 1929, pages xxv, 826.

Mr. Lincoln's book on the financial aspects of business is a well known standard work of the highest quality. In this fourth edition the author has brought his illustrative statistical matter up to date, has rewritten the text in many places, and has added material, especially a whole chapter on The Prospectus and its Analysis. It is interesting to find this writer, whose book shows a vast amount of careful analysis of business, in his preface, written seven months before the late little event of a stock market slash of 40 per cent in price, saying about the talk then current of a new economical era: "All in all this 'new era' talk is little different from that which has always accompanied great booms and speculative manias back to the time of John Law. However, both the stock market and the money market and money market signals have for some time been set at 'danger'." Prophecy is dangerous, but this prophecy must now be giving its maker satisfaction. It is in accord with the soundness of his book. Those who are interested in the subject of finance will be grateful to Mr. Lincoln for the labor he has given in bringing out his new edition. The fact that the book has gone into a fourth shows the appreciation its value has met.

Hastings Lyon[3]

Statistics. By William Vernon Lovitt and Henry F. Holtzclaw, Prentice-Hall, Inc., New York, 1929, pages xi, 304.

This addition to the already long list of good texts on statistical method, is, fortunately, of a quality sufficiently high and of a character sufficiently distinctive to justify its existence. In scope, it resembles Frederick C. Mills' well known work, *Statistical Methods,* more closely than it does most of the other available texts. Lovitt and Holtzclaw have, however, devoted more space than has Dr. Mills to the strictly elementary phases of statistics and they have also included in their work a considerable amount of factual material and a great number of exercises to be assigned to students. As the book contains only 304 pages as compared to the 604 in

---

[1] Editor of economic and business books, Harper & Brothers, and lecturer on personnel subjects, Columbia University, New York.

[2] Professor of Industrial Relations, Amos Tuck School of Administration and Finance, Dartmouth College, Hanover, N. H.

[3] Member of New York Bar; Lecturer in Finance, School of Business, Columbia University, New York, N. Y.

Dr. Mills' text, it follows that much condensation has been necessary in the discussion of those more complex phases of statistical method which are dealt with in the book. It must be said that the authors have shown unusual skill in presenting in the limited space available simple and very lucid illustrations both of the mathematical processes employed and of the applications of these processes to practical problems.

To attain brevity it has obviously been necessary to sacrifice something. This something has in the main been a critical analysis of the reasons underlying the statistical methods described. In this respect, the text being reviewed does not compare favorably with the works of Chaddock, Jerome and Mills.

To sum up, it is long on the "how" but short on the "why." More attention to the "why" would, for example, have given the chapter on "Index Numbers" higher utility to the student. For the reasons just mentioned, the book should serve admirably as a text in the hands of a skilled teacher who would show the reasoning back of the processes used, but it would not be so helpful to the student depending for guidance solely upon the text.

In addition to the topics dealt with in most elementary texts, Lovitt and Holtzclaw discuss Z charts, sampling, the standard error correlation from ranks, multiple regression, partial and multiple correlation, the co-efficient of contingency, the binomial distribution, the normal probability curve, and the simpler methods of fitting curves to date. Considerable space is devoted to a discussion of various price index numbers, and to the work of the Harvard and Babson statistical organizations.

The authors are to be complimented on the quality of the large number of exercises and problems which are inserted at appropriate places throughout the text as well as upon the excellent illustrations chosen to bring out the salient principles set forth.

WILLFORD I. KING[4]

Dictionary of Industrial Administration. Edited by John Lee, Isaac Pitman & Sons, New York, 1928, 2 vols., pages xv, 1151.

This is a comprehensive and valuable "encyclopaedia of the organization, administration, and management of modern industry," edited by a writer who has shown his high competence in previous volumes. It has contributions from over one hundred authorities, chiefly British, many of them eminent in their respective fields and known to American students.

The material is well selected and covers not only the specified fields but includes also a broad content of economic, legislative, and social subjects. As is not unexpected in a British work of this character, liberal space is given to problems of labor, industrial psychology, trade unionism and similar aspects of administration. Thus the compilation is relieved of a restricted viewpoint, without sacrifice of technical treatment. The volumes are appealing in form and typography, and their content is interesting enough to attract a reader away from a specific subject of inquiry to a perusal of other material.

The space allotted to the different topics varies from a pithy sentence or paragraph to a fifty-page treatise, such as that on Power. The terse handling of a subject in any particular place, however, does not tell the whole story because further discussion of it is apt to be found under one or more other titles, and is usually adequate and helpful. For this reason, no reference is made here to specific articles, although many will impress themselves as notable contributions to their fields.

Useful as this encyclopaedia will prove, there is still a question as to whether the alphabetical method of arranging subjects in the field is as desirable as the more functional grouping used in similar American compilations, such as *Management's Handbook,* edited by L. P. Alford. The subject of industrial administration is still fairly new, and its classifications, subdivisions and terminology are still unstandardized. For the near future at least, it might be better to attempt systematic arrangement of such material, applying the alphabetical analysis to a minutely detailed index.

HERMAN FELDMAN[5]

Industrial Organization and Management. By William B. Cornell, The Ronald Press Company, New York, 1928, pages xiii, 653.

Based on an analysis of the major problems of industrial management, this book deals with fundamental principles and practices as at present found in the more progressive organizations of the country. The material in this book is well-arranged and classified so as to emphasize these general principles and fundamentals in a most effective manner.

The chapters on the Principles of Organization and the Irreducible Minimum of Organization Functions are most helpful and serve to clarify the rather difficult subject of organization principles.

Subsequent chapters explain in detail the functions and duties of the various major factory departments, illustrated with material drawn from specific practices of well known firms. By devoting a chapter to each of the major departments, or divisions, found in the majority of organizations the author covers each important phase of factory management in a comprehensive and effective manner.

This text is distinctive in that the author emphasizes basic principles which apply alike to all concerns and then illustrates them with typical examples, to show the practical application of the principles. This is accomplished, first, by a discussion of general principles in the opening chapter and then by beginning each major chapter with an outline of the general principles before proceeding to specific illustrations.

The entire method of treatment reflects the broad practical experience of Professor William B. Cornell, both as an engineer and as a teacher. It is a valuable text and offers a method of approach to the subject of industrial management, together with a comprehensive plan for its systematic study. This commends itself strongly to the instructor who appreciates the importance of teaching general principles instead of specific systems, so that the student may be better equipped to meet and solve a variety of problems instead of being drilled in certain specific practices as if they were panaceas and "cure-alls."

---

[4] Professor of Economics, New York University, New York.

RALPH G. WELLS[5]

Foremanship (2 Vols.). By E. H. Fish, Associated Press, New York, 1928, pages xi, 306.

This work is the Standard Course of the United Y. M. C. A. Schools prepared for general use in classes, conferences and discussion groups, and is an augmented revision of a text used for this purpose since 1921.

It is now recognized that a text prepared for foreman training purposes is satisfactory as it is definitely constructed to meet the specific needs of a group and most satisfactory if the composition of the group is homeogeneous as to the kind of industry represented. Obviously, a text such as the present one, designed to serve all industries with equal suitability, is under a very severe requirement. Practically, it is not possible to furnish a satisfactory handbook of information of every sort.

Much interesting and useful information is given. As a matter of fact, it is mostly of this kind, but after due allowance is made for the general excellency of the content and the severity of the requirement just mentioned, there are some weaknesses, some needless repetitions and some inadequacies.

It seems inconsistent when dealing with the speed of machines to make the statement that "Speeds and feeds are matters of experience and judgment. The experience may be some dim memories in the back of a man's head or it may be the result of some carefully carried out experiments. . . . There can be no doubt which is the better, and yet the shops that deliberately go to work to find out systematically what is the best way to do their work are as scarce as the proverbial 'hen's teeth'," and in the same section to suggest as correct practice that "Machine tools, such as lathes or milling machines, are examples of machines the speeds of which are being varied frequently by the operator and which depend on his judgment for their product."

On page 116, *profits* are incorrectly represented as an element of *cost,* from a cost accounting standpoint.

Pages 79-86 constitute a chapter section "Removing Obstacles to Production." On page 106 there is a trifling paragraph with the identical heading and on page 109 another chapter section begins, "Intangible Hindrances to Production." There are other instances of this sort, one of the most noticeable of which deals with the distribution of overhead charges (pages 124 and 514). Some consolidation in these cases seems possible.

It does not seem logical under the sectión "Methods of Wage Payment" to introduce subsections such as "Life Insurance as a Means of Holding Men," "Paternalistic Insurance," "Mutual Benefit Associations," etc., especially if one is entitled to feel that the actual mechanics of various *methods* of wage payment, too seldom understood by foremen and others, are themselves inadequately treated. The same sense of inadequacy prevails in the description of the method of making time studies. There is insufficient recognition of a time study engineer's dependence upon the foreman's full co-operation based upon knowledge and understanding.

It is felt that when this text is again revised the elimination of generalities purely of an informational sort and of the real cases of repetition, with a more orderly overall presentation, will make it possible to remedy inadequacies of the sort mentioned without increasing the size of the text greatly, if at all.

ERNEST G. BROWN[6]

Foreman Training. By George F. Mellen, McGraw-Hill Book Company, Inc., New York, 1928, pages ix, 150.

This text is a guide for foreman training by the conference method. It consists of two volumes, the first of which is now available. The basis for the volume is the experience of the Department of Engineering Education, Pennsylvania State College, in the conduct of training courses at more than one hundred industrial plants. The various members of the college staff have collaborated in its preparation.

The order selected for the development of the text seems most logical. At the outset the "job" of foreman is defined in terms of *responsibility,* covering first the general phases of his work on through production and cost responsibilities. The following chapters are non-technical, dealing largely with the human factors. The mechanics of foreman's job handling are reserved for the second volume. The material increases in strength progressively and the concluding chapters on Supervision and Leadership are among the best.

This is a compact, well-written, easily read and informative book such as one is entitled to expect from such a source.

ERNEST G. BROWN[6]

The Consumer Looks at Advertising. By Paul T. Cherington, Harper & Brothers, New York, 1928, pages xiv, 196.

This is a well written, intelligent, lively book on the functions and values of advertising. The title, however, is not entirely appropriate. It suggests that in the book one may find a consumer's views on advertising. There are two or three chapters that deal very specifically with the relations of advertising to the consumer and with the need of advertising to meet present-day consumer demands. As a matter of fact the rest of the book presents a very professional but, be it said, a very logical statement on the uses of advertising. It makes a decided contribution in this direction by indicating the possible results from the use of advertising not only in the lines in which advertising has already been developed, but also in certain fields in which its use is still probably in its infancy, such as in banking, in law, in medicine and in religion.

---

[5] Head, Department of Management and Method, College of Business Administration, Boston University, Boston, Mass.

[6] Assistant Factory Manager, National India Rubber Co., Bristol, R. I.

In this book, Paul T. Cherington has presented what is probably the best answer so far issued to recent criticisms of advertising. While the book was written in 1928, it has an exceedingly timely interest to advertisers and those interested in advertising in 1930. Considerations of advertising policy growing out of changed business conditions demand the kind of study that Mr. Cherington has given to the subject in this little volume.

PAUL H. NYSTROM[7]

Psychiatry in Industry. By V. V. Anderson, M.D., Harper & Brothers, New York, 1929, pages xv, 364.

Four years before this book was written, Dr. Anderson organized a unit for the study of personnel problems in R. H. Macy & Company. He composed his unit of a psychologist, a psychiatric social worker, and himself, a psychiatrist. By thus instituting what might be called a "total-situation unit," instead of confining his approach to one of the branches of the social or mental sciences, Dr. Anderson made a fundamental step forward in the study of personnel problems in commerce or industry.

During the four years of study and experiment which preceded the publication of his book, Dr. Anderson's unit dealt with three main types of problems: problems of mental maladjustment or disturbance, especially cases of work failure and of ill-health; problems of selection and placement of both employes and executives; and surveys of departments and operations from the point of view of personnel management.

The outstanding characteristic of this work is that it dealt with problems as a whole, and not with dissociated parts. Mental tests, for example, were not, as so often, considered in isolation or as instruments sufficient in themselves. Instead they were studied as an integral part of the larger problem of selection and placement and utilized jointly with job analysis and interviewing. As a result, the inter-relation of these measures was psychologically worked out and a general technique of selection, not merely an instrument of value in selection, was scientifically developed. Similarly throughout these studies, with every problem handled, instead of devising some partial measure, the total psychological situation was studied. Throughout the work, also, the importance of treating each individual as an individual, not as an instance of a type, was emphasized.

The book describes this work of Dr. Anderson's unit simply, clearly, and without generalizing. It contains many cases but outlines few theories. With almost the single exception of the "psychiatric guide for employment interviewers," even practical conclusions and procedures are given in terms of the particular problems and experiments from which they arose. In dealing with so complex and subtle a problem as human nature it is of value in order to avoid overgeneralization, to stick close to actual factual material and allow each person to make his own application. And yet, because of lack of explanation, much of the case material in the book is difficult for a layman to interpret. Without psychiatric background, the significance of the facts recited is often hard to discover in the factual case reports, and the principles which explain the matter-of-fact descriptions of methods and results are often far from evident. Nevertheless, even to the layman the book gives an important picture of what a broad scientific approach to problems of human relations involves.

The methods and experience of Dr. Anderson's unit are as suggestive for industrial as for mercantile companies. Although the work was confined to a single large department store, and his conclusions relate primarily to such questions as the selection of "heads of stock," the qualities distinguishing good and poor sales clerks, or the prevention of delivery automobile accidents, the fundamental problems of human nature which underlie these particular problems exist alike in merchandising and industrial concerns. In both, also, it is essential for the management of human beings to be grounded on a sound understanding of human nature, and it is becoming more and more evident that under present-day conditions, the fullest understanding is only possible if the manager utilizes all that science is able to tell him about human nature. Hence, while Dr. Anderson's book emphasizes primarily the value to industry of the professional psychiatrist, it will probably also be of wide influence in making apparent to executives the value to them of gaining as sound a psychiatric and psychological background as possible for their own work.

While only a few concerns today can afford to employ such a unit as Dr. Anderson's, intensely valuable though it is, and while even fewer psychiatrists are qualified and available for work in industry, there are few executives who would not profit from the orientation as to personnel problems, and the realization of the aid scientific understanding can render in meeting them, which this book gives.

ELLIOTT DUNLAP SMITH[8]

Middletown. A Study in Contemporary American Culture. By Robert S. Lynd and Helen Merrell Lynd, with a foreword by Clark Wissler, Harcourt, Brace and Company, New York, 1929, pages x, 550.

Why a sociological study of Middletown or Main Street should have space in the BULLETIN OF THE TAYLOR SOCIETY was this reviewer's first question. The book itself does not leave it long unanswered. The Dominance of Getting

---

[7] Professor of Marketing, School of Business, Columbia University, New York, N. Y.

[8] Professor, Industrial Engineering, Sheffield Scientific School, Yale University, New Haven, Conn.